

'It's Important to
Know In Time'

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The Newspaper
of the Industry

Air Conditioning & REFRIGERATION

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INDUSTRY COUNCIL IS FORMED!

Refrigeration Repairmen Get 'Essential' Rating

Selective Service Says
They Can Be Deferred
As 'Essential' Men

WASHINGTON, D. C.—Definite instructions for the guidance of local Selective Service Boards to the effect that refrigerator service men are "essential" in activities which contribute to the War effort, and thus eligible for deferment from Selective Service as "necessary men," were issued Jan. 9 by the Selective Service Bureau of the War Manpower Commission.

"In furtherance of the program to keep essential workers in activities which contribute to the War effort," the announcement stated, "the Selective Service Bureau of the War Manpower Commission has advised local board of 34 essential occupations in repair and hand trade services, in which occupations registrants may be deferred as 'necessary men'."

Listed in Occupational Bulletin No. 42 which carries this directive are, in addition to "refrigerator repairman," such kindred skills as "electric appliance serviceman," "electric motor

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Refrigeration May Save Coffee Smell at Least

BRONX, N. Y.—There'll be no shortage of coffee smell around the U. S. A. once refrigeration goes to work in W. R. Johnston's new coffee-grinding process.

Designed to leash the fragrance of the crushed coffee bean for the steaming cup and cheering swallow, Mr. Johnston's coffee-grinding method is covered by patent No. 2,306,061.

Here's what that patent describes: a way of grinding coffee in an atmosphere of nitrogen or other inert gas at a temperature far below the freezing point so that escaping volatile substances—source of coffee odor—are captured and passed into the coffee extract.

Rights in the patent are assigned to Standard Brands, Inc., now entitled to offer, with the help of refrigeration, a double-duty drink with a whiff in every sip.

Who's Wasting Materials, Manpower, Money, Tires and Gasoline Now?

It may seem odd to some that the Newspaper of the Industry (and as such, its protector, advocate, and defender) would get wrathful over a juicy order just handed to some refrigerator manufacturers for a large quantity of their peacetime products. But that's exactly what we're going to do. Believe it or not.

"There's a war on," as we are told so frequently, and the first duty of all of us is to Put First Things First for the speedy winning of the war. Toward that end it is our duty to conserve materials, manpower, money, tires, and gasoline, among other things.

And if somebody sells somebody else a bill of goods which will result in a foolish waste of those vital-to-the-war commodities, it's our duty as a part of America's "free press" to expose it. Or, at least, to question it.

According to a recent WPB announcement, domestic non-mechanical refrigerators to be produced during the first quarter of this year may total 150,000 units. Seven manufacturers have been granted up to twice their average production during 1942. Five other manufacturers will be allowed to build 5,000 units apiece. (See item on page 3, Jan. 11 issue of the NEWS.)

"The allowed production," says the WPB, "is to fulfill military, war housing, and essential civilian requirements and help to fill the gap caused by stopped production of mechanical refrigerators."

Very nice. BUT . . . we should like respectfully to point out that close to 400,000 new mechanical refrigerators are lying idle in warehouses today. They were frozen "to fulfill military, war housing, and essential civilian requirements."

At the present rate of withdrawal, these stocks should last until 1947! By that time, we all hope, the war will have been won. Why, then, should valuable labor, wood, and steel (even though these refrigerators use only 10% of the steel found in pre-war boxes) be wasted to build more refrigerators to fill more warehouses?

(Concluded on Page 11, Column 3)

McKesson Manages Sales For Ansul

MARINETTE, Wis.—The directors of Ansul Chemical Co. announce the appointment of L. C. McKesson to the position of sales manager. Mr. McKesson, known to many in the refrigeration trade as "Mac," has served Ansul for 15 years.

In 1927 he was employed as manager of the traffic department. In 1930 he was transferred to the sales department, and in 1938 was made assistant sales manager.

F. J. Hood, secretary and treasurer of Ansul, and former sales manager, will continue as sales director of Ansul and its subsidiaries, but will devote the major portion of his time to mounting executive duties.

'Emergency' Ratings Available In Field

WASHINGTON, D. C.—A further step toward decentralization of the War Production Board was taken today with the granting of increased authority for approval of individual emergency preference ratings to the field offices of WPB.

The 12 regional directors of WPB are now authorized to approve, countersign, and issue individual preference ratings for emergency repair, up to and including AA-1, in accordance with specific instructions to be issued from time to time by the Deputy Director General for Distribution. Regional Directors may authorize the Deputy Directors to perform these functions.

In addition, the 110 district offices may for the first time grant ratings for emergency repair, up to and including AA-2X.

The authority delegated is limited to cases where the material for which the applicant seeks priority assistance does not exceed \$500 value.

NEW YORK CITY—A pledge to continue to do all in their power, consistent with the war effort, to provide household refrigerator repair parts, has been made by the Household Refrigeration Section of the National Electrical Manufacturers' Assn. (Nema) in announcing a new drive urging dealers to speed up the salvage of old parts in accordance with the instructions for return issued by the individual manufacturers.

Each manufacturer who is a member of the group will insert a statement in his trade advertising which will say, in effect, "Help Yourself! Help Uncle Sam! Salvage old appliance parts promptly, so that we can rebuild them into new repair parts."

The Nema announcement declared that among the manufacturers there is a definite feeling that while the repair parts situation will continue to be critical, nevertheless, the close cooperation of dealers with manufacturers in returning defective parts will cut down the delay in satisfying customer needs.

Another feature of the Nema program is the publication of a new explanatory folder in the form of "A Statement to the Women of America from the Electric Appliance Industry." It is intended for use by the retailer's service man with his customers in cases of unavoidable service delays.

This folder, which will be supplied

Associations To Join Forces For Common Cause

Leaders of Refrigeration
Groups Brought Together
In New War Council

NEW YORK CITY—Combining every organized element of the existing refrigeration and air conditioning industry, the National Refrigeration War Council has been organized to mobilize the resources, brains and manpower of the refrigeration industry for the successful prosecution of the war.

John Wyllie of Temprite Products (president of the Refrigeration Equipment Manufacturers Assn.) is chairman of the new body. Alex Holcombe, Jr. of Victor Sales & Supply Co. (president of the National Refrigeration Supply Jobbers Assn.) is vice chairman, and Charles E. Harris, representing the Refrigeration Service Engineers Society, is secretary.

Associations represented include the following:

Air Conditioning & Refrigerating Machinery Assn.: C. E. Wilson (Worthington) representative; W. H. Aubrey (Frick) alternate.

American Society of Refrigerating Engineers: Charles R. Logan (Superior Valve) representative; A. B. Schellenberg (Alco Valve) alternate.

Commercial Refrigerator Manufacturers Assn.: John Hart (McCray) representative; C. V. Hill, Jr. (Hill) alternate.

Refrigeration Equipment Manufacturers Assn.: John Wyllie (Temprite) representative; Robert Luscombe (Penn Switch) alternate.

Refrigeration Service Engineers Society: Charles E. Harris, representative.

Refrigeration Supply Jobbers Assn.: Alex Holcombe, Jr. representative.

Standard Refrigeration Compressor Assn.: E. A. Terhune (Servel) representative; Ben J. Scholl (Brunner) alternate.

Purpose of this voluntary organization is that of "bringing into focus and making available to our government the cumulative knowledge and

(Concluded on Page 24, Column 1)

How Salesmen Can Get Extra Gas

WASHINGTON, D. C.—Formal provisions under which salesmen distributing essential commodities—other than salesmen in 17 Eastern States and the District of Columbia—will be allowed additional mileage, were written into the gasoline rationing regulations on Jan. 5 by the Office of Price Administration.

As requested by Rubber Director William Jeffers, OPA is providing to qualified salesmen up to 65% of their last year's mileage, or 8,600 miles a year, whichever is less. However, because of the gasoline shortage in the East, the extra gasoline for salesmen will be provided only in the states outside the eastern shortage area.

OPA War Price and Rationing Boards were to issue ration books for the additional mileage beginning Jan. 8.

To qualify, a salesman must have been principally engaged in an

(Concluded on Page 21, Column 1)

'Air Lock' Keeps Conditions Static in Special Room Built Inside War Factory

Room Is Air Conditioned for Precision Work

BLOOMFIELD, N. J.—An air-conditioned "room" with equipment suspended from the factory ceiling has been installed by a General Electric air conditioning dealer for a company making precision tools used in production of a military device.

Precision machining operations in manufacture of the tools—which must be machined to a tolerance of 1/10,000 of an inch and are measured by a new type of electric apparatus costing about \$10,000 per unit—called for air conditioning. General Electric provided this set-up:

A thoroughly insulated room 14 feet by 20 feet by 9 feet six inches, with double glass windows approximately 62 inches high on three sides was built inside the factory with floor of the room raised higher than the factory floor and ceiling lower than factory ceiling.

An air lock was arranged by use of a small vestibule equipped with a G-E electric eye so that one door closes before the other can be opened and conditions in the room are not disturbed.

These conditions are maintained, according to G-E representative Jim Galloway, as follows: "70° F. dry bulb, plus or minus 1°; relative humidity, 30% plus or minus 2% all year round."

To maintain this temperature and humidity, a 5-hp. General Electric condensing unit is used with a 14-

row cooling coil and a bank of 18 electric strip heaters for pre-heat.

"In order to save floor space on the exterior of this room," explains Mr. Galloway, "the air conditioning equipment is suspended from the ceiling of the factory, ductwork and piping entering the conditioned room through a centrally located outlet."

Fluorescent lighting is used in the room.

'Good Housekeeping' of Detroit Shuts Branches

DETROIT—All neighborhood Good Housekeeping Shop stores in this city were closed Jan. 1.

"Our stock of washers, refrigerators, ironers, sewing machines, and most of the smaller devices has been exhausted," the management of one of Detroit's largest appliance dealerships explained. A limited number of gas and electric stoves and a few radios are still available, management says, but when these are gone there will be no more for the duration.

As a first step toward post-war business however, the shop has bought a six-story building on Library Ave. in downtown Detroit and established headquarters there at the first of the year. All payments and service calls will be handled through the new offices.

Navy Recognizes That To Feed Properly - You Must Keep Food Properly



(Above) Quality meat products for our Navy fliers in training are kept in prime condition at the Naval Air Station in Jacksonville, Fla. in storage rooms like this. The cooling coils are overhead in this installation made by Florida Ice Machine Co., Frick distributor. (Right) This very neat machine room houses three Frick 4 x 4 compressors which furnish refrigeration as needed in the mess hall, bakery, barracks, and brig.



Reusing's, Inc. Moves Its Asheville Quarters

ASHEVILLE, N. C.—When the U. S. Postal Accounts division took over Asheville's Arcade building, Reusing's, Inc., local Frigidaire dealer as well as former Arcade tenant, packed up office force and sales staff and moved in with the company's service department at 131 Patton Ave. here.

Reusing's reports that the new general headquarters have now been redecorated and are arranged to give working efficiency and customer comfort.

Four Cooling Systems Used By Navy at Jacksonville Aviation Training Bases

Variety of Uses Demonstrated In Navy Station Systems

JACKSONVILLE, Fla.—To meet refrigeration needs of one of the largest aviation training and operating bases in the country, four refrigerating plants have been installed here at the Jacksonville Naval Air Station.

Equipment, ranging from a 3 by 3 two-cylinder unit to a complete cold storage plant refrigerating system, was all sold and installed by the Florida Ice Machine Corp., Frick Co. distributor in this city.

DRINKING WATER

The 3 by 3 two-cylinder unit, smallest outfit of the four, cools drinking water and four storage rooms in the kitchen of the bachelor officers' quarters.

A second installation contains a 5 in. by 5 in. ammonia unit connected to a shell-and-tube brine cooler, and 3,200 ft. of 1½ in. pipe coils and 1,170 ft. of 2 in. pipe coils divided among five rooms. This equipment serves the cold storage plant at Green Cove Springs, advanced training base under the Jacksonville Station.

MESS HALL BARRACKS

To cool mess hall barracks, bakery, and brig, Florida Ice Machine Co. set up three 4 by 4 machines connected to a pair of 16 in. by 12 in. condensers, a 16 in. by 9 ft. brine heater, and to a pair of brine coolers. Both brine heater and condensers are mounted above the receiver, and float valve control is employed in the system.

Largest outfit is installed in an extension to the cold storage plant at the Station and contains two 7 by 7 machines each equipped with unloader. Compressors operate at 400 r.p.m. and a brine heater is mounted above the system's condenser.

Instead of a shell type brine cooler, this installation has a brine tank 14 ft. long by 5 ft. wide by 6 ft. deep

which is equipped with vertiflow coils and accumulator. Cold brine is circulated from the tank through 12,000 ft. of 1¼ in. galvanized coils, distributed among 13 rooms.

CONTENTS OF ROOMS

Four of these rooms hold dairy products, two hold fruit and vegetables, three store meats, two store fish, and others are used for dry storage and for thawing and cutting.

An ice tank equipped with raceway, coil, and 50 100-lb. cans completes the installation.

Quick Freezing Meat

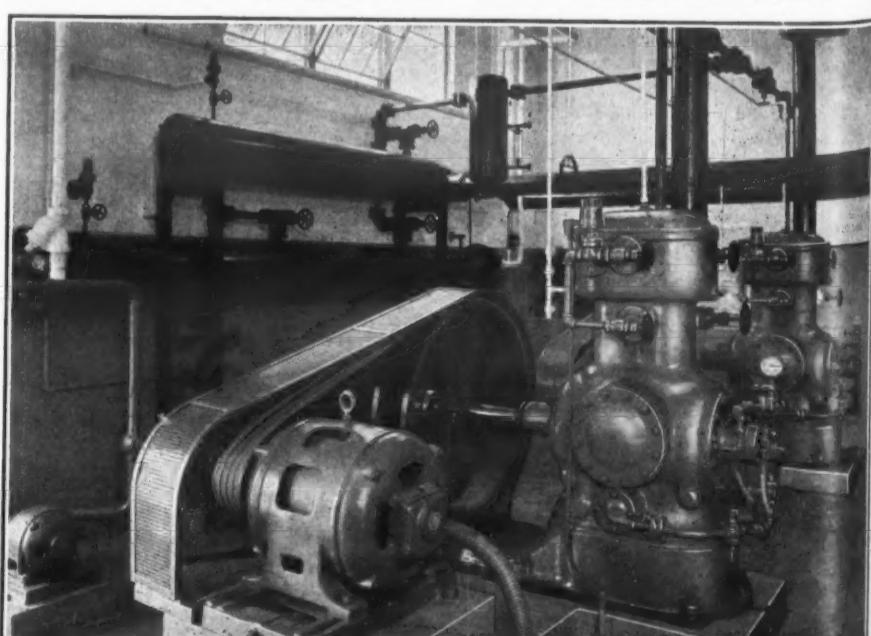
For Army Doubles Demand for Knives

WASHINGTON, D. C.—Present quick-frozen shipments of meat for military consumption because of weight and space savings more than make up for a doubled demand for steel knives required by such packing. WPB officials and representatives of the cutlery industry decided here last week in a discussion of simplification of knives.

Seeking to cut down on use of steel for cutlery, members of the industry stated that twice as many knives are required by present methods of packing meat for shipment than by previous methods used. Today, they explained, the carcass is completely boned, then quick-frozen, paraffin coated, packed in cartons, and shipped. Formerly the whole side or full carcass was shipped from packing establishments.

The newest packing process saves about 1/4 of shipping space and 1/4 of weight, it was pointed out, and hence offsets the extra steel required for knives in preparing meats by this method.

Part of the Jacksonville Naval Base Installation



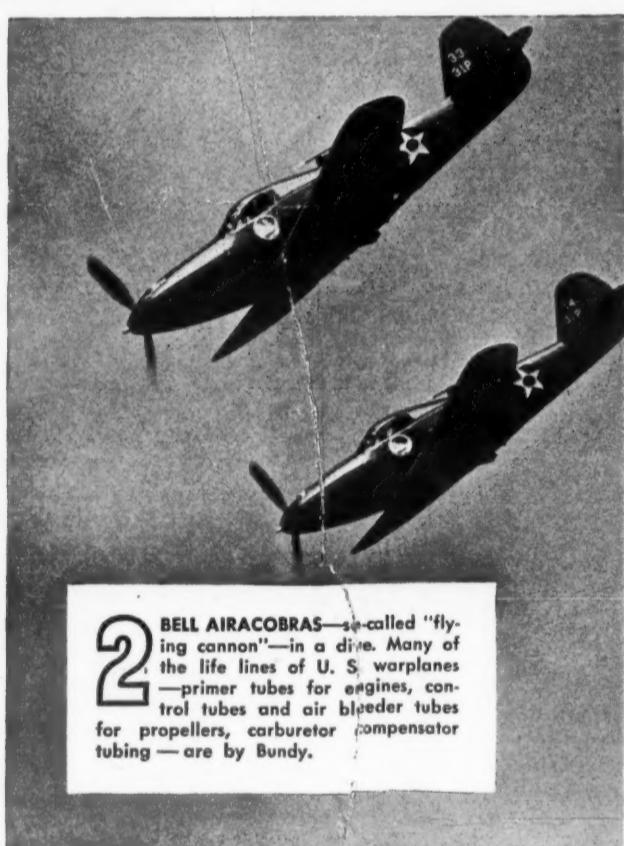
These Frick 7 x 7 compressors, each with automatic unloader, handle an extension to the cold storage facilities at the Naval Air Station at Jacksonville. The shell vessel above the condenser is a brine heater.

FAMOUS LIFE LINES



1 COASTAL CONVOYS, life lines of our East Coast and Caribbean water-borne transport, are guarded day and night by U. S. destroyers like this. Note the Navy blimp hovering protectively over one of the tankers in the convoy.

Official U. S. Navy Photograph



2 BELL AIRACOBRA—so-called "flying cannon"—in a dive. Many of the life lines of U. S. warplanes—primer tubes for engines, control tubes and air bleed tubes for propellers, carburetor compensator tubing—are by Bundy.

Official Photograph, U. S. Army Air Forces

THIS is a war of little things as well as big. On slender lines of tubing, for example, may depend the lives and fighting effectiveness of the men in tanks, jeeps, bombers, PT boats, destroyers.

Life lines of Bundy Tubing transmit hydraulic pressure for tank turrets and for all types of motor vehicles. They carry refrigerants to cold rooms of warships to chill both food and ammunition. They feed

power boats, mine sweepers, tractors, Diesel engines with needed fuel and lubrication lines. They supply mechanical or structural tubing on radios, aircraft, gliders, tanks. And this is just a partial list.

We at Bundy are proud to assume the responsibility of seeing that these and many other forms of fighting equipment get the finest, most dependable tubing we can make. Bundy Tubing Co., Detroit, Mich.

Buy U. S. War Bonds—Get in Your Scrap

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS



BUNDYWELD double-walled steel tubing, hydrogen-brased, copper-coated inside and outside. From Capillary sizes up to and including 1/2" O. D. This double-walled type is also available in steel, tin-coated on the outside, and in Monel.



BUNDY ELECTRICWELD steel tubing. Single-walled—but welded—annealed. Available in sizes up to and including 2" O. D. Can be furnished tin-coated outside in smaller sizes.



BUNDY "TRIPLE-PURPOSE" tubing. Double-walled, rolled from two strips, joints opposite, welded into a solid wall. Available in all Monel; all steel; Monel inside—steel outside; Monel outside—steel inside. Sizes up to and including 3/4" O. D.

CONSERVICE?
CONSERVICE?
THAT SOUNDS LIKE A
NEW WORD!

Yes, "CONSERVICE" IS A NEW WORD!

It sums up the broadened conservation and service program now being operated by Westinghouse and its retailers

Conservation... Service... these two critical words have been telescoped into **Conservice**—a new term for a new kind of helpfulness to appliance users.

Here is what this Conservice program is designed to do:

1. Educate your customers in the proper "care and use" and thus—
... lengthen the life of appliances
... prevent needless service calls
2. Promote conservation of renewal parts—
... by showing your serviceman how to repair old parts
... by reoperating at the factory the used parts which you return, thus conserving critical materials
3. Help you provide quality service—
... by informing and training your servicemen
... by providing renewal parts

In order that your entire service department, especially the newcomers, shall be primed on every phase of this new Conservice program, Westinghouse is launching a series of Conservice Training Schools. Both in scope and character, we believe they will go far beyond anything ever before offered electric appliance dealers.

While doing everything in our power to keep a steady supply of renewal parts flowing to you, we are at the same time giving you the kind of practical assistance that will help you solve your man power and service problems.

WESTINGHOUSE ELECTRIC & MFG. CO.
MANSFIELD, OHIO

Tune in the Westinghouse Program, NBC,
Sunday 2:30 P. M., Eastern War Time



Westinghouse

ELECTRIC HOME APPLIANCES

A Completely Equipped Conservice Training School
Hundreds to be Conducted during 1943

Here's a course of instruction that is made to order for the times. One part of it is planned especially for the newer men and women who will be servicing appliances during the coming months.

With dramatic training films, illustrated manuals, simple discussions and demonstrations, the service person receives training completely covering the servicing of Westinghouse appliances and the conservation of renewal parts.

Your Westinghouse distributor will notify you just as soon as the time's set for the first Conservice Training School in your territory.

Copyright 1943, Westinghouse Elec. & Mfg. Co.



Inside Dope

(Concluded from Page 1, Column 1)
be produced, they will stipulate what can. And how much.

A list of some 10,000 allowable-to-manufacture items is now being made up. Products which aren't on that list won't be manufactured—subject, of course, to the usual appeals, admissions of error, and correction of oversights.

If you are on the list—and chances are most now-being-made refrigeration products will be—you will be told what percentage of your 1942 production you will be allowed to turn out (could be more than 100%). You will also be told what amount of critical materials you can use in fabricating this allowable production. (This may not actually come to pass, but it's "in the works.")

Concentration of Industry

Last summer the NEWS told subscribers to stop stewing about "concentration of industry," that it was a long way off, and would be most difficult to apply to the heterogeneous refrigeration industry anyway.

Half a year has now passed, and "concentration" isn't much further along now than then. Give sober minds in WPB credit for that. It's loaded with dynamite, and they're not disposed to rush into it without checking all the angles.

It would seem, however, that the new Controlled Materials Plan might and personnel?

operate to bring "concentration" closer, particularly if allowable production of any item for civilian use is too small for economical production.

If-as-and-when it does come, here are some of the factors which will be considered when designating plants in which production will be concentrated: Proximity to sources of materials supply, efficiency with regard to waste and scrap control, efficiency with regard to quantities of scarce materials used, adequacy of labor force, length of work week.

Those "sober minds" we spoke about also do not favor choosing the nucleus plants without giving all candidates a chance to be heard.

Submarine Menace

Private information now being circulated among newspaper men reveals that the submarine menace is growing, that it is worse than censorship has seen fit to reveal. It has raised havoc with our shipment of supplies to the African front, and it is believed that the situation could deteriorate even more.

Hitler is building 'em faster than we can sink 'em. It gives further backing to the proponents of giant cargo airships. Why build so many ships, one hears, only to have them sunk—along with valuable cargoes

Escort vessel production is being given the green light.

William S. Shipley

York's William S. Shipley has resigned as Smaller War Plants Corp. vice chairman, in order to return to pressing duties at the York plant. No doubt these "pressing duties" are real, but insiders say there's another reason for the resignation.

These insiders (not Mr. Shipley himself) insist that he is disgusted with the failure of the SWPC to get going, show results. His attitude may encourage other dissatisfied members to blow off, with the result that SWPC will take war contracts itself, farm out subcontracts to needy small manufacturers.

Biggest problem, again, is materials distribution. There simply aren't enough critical materials to supply those already holding contracts.

Labor Troubles

A rash of labor troubles may be about to break out. The War Labor Board is lost in red tape, far behind in its unfinished business. Labor is getting impatient. Leaders are restless, too; they haven't had enough to do to justify their jobs and "the take."

Look for further pressure to ease out Madame Perkins as Secretary of Labor.

Harry Hopkins is due for some uneasy moments, too. Now that Congress has forced Henderson out, Hopkins appears to be on the "heat list."

'Until I Come Back'

Some of the finest writing of modern times has appeared in advertisements. This isn't too remarkable when you consider the fact that a good writer can make a helluva lot more money writing advertising copy than he can writing poetry, short stories, or articles. (And it comes in regularly, too!)

But it isn't often that a true classic is written, like Cadillac's "The Penalty of Leadership" or Jordan's "West of Laramie." The test of a classic is how long it lives, how often it is quoted. Apparently Nash-Kelvinator has come up with a classic in its recent "Until I Come Back."

No doubt all of you have read this heart-tugging piece of copy on the thoughts of an aerial gunner as he rides over Holland. Like all soldiers, he dreams of home, and wants it to be like he left it.

This advertisement has been picked up and quoted by newspapers and periodicals all over the country. Editorials are being written about it. Chances are that it will wind up in anthologies some day.

The best of the editorials it has evoked (in our opinion) is the following, which comes close to being a classic in its own right:

We Heard You, Joe

"Yes, son, we read every word you had to say in that Nash-Kelvinator ad that appears in today's Item. Maybe the reason we liked it so well is that it checks with our ideas right down to the fourth decimal place. Because, while we're not fortunate enough to be in any of the armed services this time, we still remember just how it felt to wonder what home would be like when we'd be coming back in 1918 or thereabouts.

"What's more, we're just as fond of Doc Elmslee's drug store as you are of the Elite Pharmacy or whatever it happens to be, in your home town; and we'll bet a cookie the soda fountain in the drug store you're talking about has the same kind of marble-and-glass faucet stand, colored as if a ketchup bottle had gone native among a lot of poached eggs, that Doc Elmslee's fountain still has.

"Most of us would give about anything we possess to trade places with you, and be where we too could fly over Naziland or shoot Japs on the rise. The truth is we're no longer good enough for that. But you are, Joe, Lord love and keep you! And a lot of self-deluded bigshots who don't know what it means to drop in at Doc's or the Elite or the Sweet Shoppe are now kicking themselves because they guessed so wrong on how good you are—and how well we at home were going to back you up.

"One reason we're backing you up that way, of course, is because you're our boy. We knew you when you were the neighborhood holy terror from whom no orchard was safe in the fall and no melon patch in the summer. And we saw you make that touchdown run for good old Walnut Hill High, or clerking in Himmelbarger's grocery, or delivering the Evening Beacon. And we remember when your Dad gave you your first 22-calibre rifle, a single-shot pot-metal affair that had you proud as a peacock and the rest of us nervous as a broody hen. And we remember all those riotous games of 'Red Rover, Come Over' on Bingham street after supper till your mothers called all of you in at bed-time. And while the prayers you young uns said before you turned in were likely all worded differently, they all meant the same thing, and that's the very thing you're out there fighting for, miles above the Zuyder Zee and heading east through the night.

"Which is really the biggest reason why we're backing you up so wholeheartedly, son. We believe in exactly the same things you do, no matter how differently each one of us might phrase them. Consequently, back home here, we'll do whatever's needed to make sure that Doc Elmslee's drug store and Himmelbarger's grocery, and Mandelbaum's tailor shop and Joe Salvati's fruit stand, and Reverend Blaine's church and Public School No. 7 will all be doing business at the same old stand in the same old way when you get back.

"You don't need to worry any about back home, Joe. We'll leave 'over there' to you, and you leave 'over here' to us. They're both in good hands."

Morgenthau Attack On 'Layaway' Bonds Draws an Answer

NEW YORK CITY — Criticism from Secretary of the Treasury Morgenthau that proposed reverse-installment buying schemes and wartime purchase plans were unfair to soldiers was denied here Jan. 7 by Dr. Robert J. McFall, chairman of an American Marketing Assn. committee which has suggested a "victory merchandise bond" plan.

Mr. Morgenthau's opinion of "unfair to men in the armed forces" went on record in Washington as his—and other Treasury experts'—principal objection to the layaway idea whereby the public would start now to pay for postwar products. He also objected to the idea on grounds that it has no visible merits over the Treasury's present plan of selling war bonds and other government securities.

Concerning his first reason, the secretary said, "Such plans simply give people who are in defense work priorities in the purchase of autos, refrigerators, washing machines, and other consumer goods which everybody will want after the war, while the men in the armed forces, who are working for \$50 a month, are acquiring no such priorities."

ABOUT THE SOLDIER

To meet this opposition, Dr. McFall pointed out that soldiers are drawn from every class of society and when the war is over will return to families whose other members are the present earners of good incomes and owners of bonds.

"It is the rank and file of normally low-income families which are earning the greatest bulk of the cash today and buying the greatest bulk of bonds," he said. "The majority of soldiers will return to these families which have the bonds and would have the priorities under the victory merchandise bond plan," Dr. McFall added.

Further noting that soldiers may put what money they have into bonds on the same terms as other people, he observed, "some of the soldiers may have more spare cash than some civilians after the latter pay wartime prices and wartime taxes."

The American Marketing Assn. spokesman also hit Secretary Morgenthau's claim that the victory bond plan offered no advantages over present war bond sales. On this point Dr. McFall contended that adoption of the "victory merchandise bond" plan, as against the use of the present type of bonds as a basis for the wartime buying of postwar merchandise, would eliminate the danger of a "run" on the Treasury to cash bonds for the purchase of scarce merchandise immediately after the war.

DANGER TO TREASURY

"The present Series E bonds," he said, "carry the contract that the Treasury will cash them on 60 days' notice. When the war is over there will be many billions of dollars worth of such bonds outstanding and the Treasury will be faced with a dangerous conversion problem. If it releases a flood of cash onto a market virtually bare of goods, we will be confronted with explosive inflationary conditions."

Dr. McFall contrast asserted that if a large part of the bonds outstanding were "victory merchandise bonds" such dangers would be reduced to negligible proportions because they would be cashed only as goods were delivered to the customer.

The American Marketing Assn. layaway plan provides for issuance of victory merchandise bonds to be sold through established sales organizations of large concerns.

ALREADY IN OPERATION

A similar arrangement for ordering now and paying for consumer goods to be delivered after the war has already been stated by the Hartford Electric Light Co. working with local Hartford, Conn., electric appliance dealers. A number of other companies have adopted the idea in simpler form, too, by encouraging purchase of war bonds to be earmarked for future buying of their particular products.

In addition, preparations for a conference of groups interested in furthering the idea have been announced by Dr. McFall and were reported in the Jan. 4 issue of AIR CONDITIONING & REFRIGERATION NEWS.

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'Priorities by Phone' Method Is Authorized by WPB

WASHINGTON, D. C.—Simplified means of applying correct preference ratings to rush orders for scarce materials placed by telegraph or telephone have been worked out here in an amendment to Priorities Regulation No. 3.

On rush telegraph orders, the

statement "ratings indicated are certified pursuant to Priorities Regulation No. 3" included in the body of the telegram has been declared acceptable certification. Requirements of Priorities Regulation No. 7 for manual signature or authorization will be met hereafter if the copy of

the telegraphed order kept by the sender is signed or authorized as directed in that regulation, it is explained.

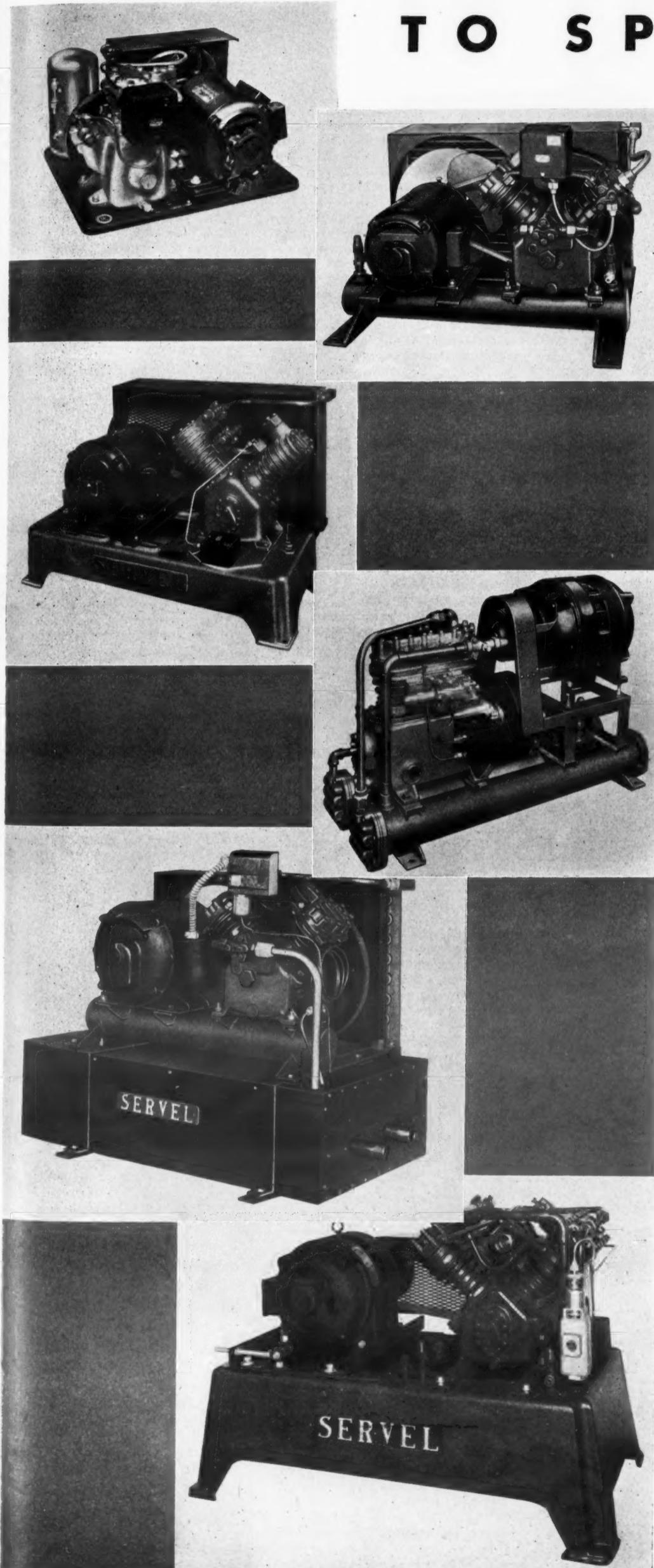
In case of a telephoned purchase order that requires shipment within seven days, an authorized official may now extend the correct preference

rating merely by telling his supplier that such rating is certified pursuant to the regulation. In telephone orders, however, written confirmation of the order bearing certification of the preference rating applied orally must be sent to the supplier within a seven-day limit, and no rating given by telephone can be extended by a supplier until he receives this confirmation.

If such verification fails to reach him within seven days, no other order may be accepted or delivered to the defaulting customer until the written certification does arrive. Furthermore, suppliers must report to the WPB Compliance division on or before the 15th day of each month any rated telephone orders for which written confirmation did not arrive as directed in the regulation.

STREAMLINED

TO SPEED VICTORY



SERVEL'S 1943 LINE

SERVEL CONDENSING UNITS FOR 1943 WILL EXTERNALLY SHOW THE EFFECTS OF OUR RIGID WAR ECONOMY. THE NUMBER OF MODELS WILL SHRINK IN KEEPING WITH INDUSTRY POLICY AND GOVERNMENT REGULATIONS, AND EVERY OUNCE OF UNNECESSARY MATERIAL WILL BE CUT OUT FOR THE BENEFIT OF OTHER WAR PRODUCTS. INTERNALLY, HOWEVER, THE ONLY CHANGES WILL BE IMPROVEMENTS AND REFINEMENTS TO INSURE BETTER SERVICE, LONGER LIFE, AND GREATER DEPENDABILITY.

The following advance information will serve as a guide pending the publication of our 1943 catalog, which will be available soon after the first of the year.

SMALL AIR-COOLED UNITS

Our units from $1/5$ HP through $1/3$ HP will be of the "compact" type on wood or composition bases. All sizes will be available in both low and medium temperature ranges, using twin-cylinder compressors.

INTERMEDIATE AIR-COOLED UNITS

Units in $1/2$ and $3/4$ HP sizes will be built on "skeleton" frames, making them satisfactory for either self-contained or remote application. Standard four-cylinder models will be available for high, medium, low and subzero (two stage) temperature ranges, with air-cooled condensers only.

LARGE AIR-COOLED UNITS

In the 1 , $1\frac{1}{2}$ and 2 HP sizes no major changes are involved, except that water-cooled models in these sizes will be discontinued. Each size will be available in the four temperature ranges as above, on cast bases.

WATER-COOLED MODELS

In the 3 HP through 10 HP range, which will be supplied with water-cooled condensers or for use with evaporative condensers, all heavy cast bases have been eliminated in a compact "tandem" type of assembly suited to either remote or self-contained work. Four and eight cylinder, pump-lubricated compressors will be continued for all temperature ranges, including the two-stage type for sub-zero applications up to $7\frac{1}{2}$ HP. In the range from 15 HP to 25 HP, both water cooled and evaporative type units will be continued as in the past but only evaporative condenser models will be available from 30 HP to 50 HP inclusive.

SPECIAL WAR PRODUCTS

The special products developed to meet the growing demand in coolant cooling, welder tip cooling, quenching, testing, blood plasma work, etc., will be continued with added emphasis. Our two-stage Freon units for minus 40 to minus 75° F. and our three-stage units for use below minus 80° F. will be available in a wider range of sizes and types.

We welcome inquiries on the "hard to do" war jobs. A request on your letterhead will bring detailed specifications and sales help if you are in a position to serve effectively in fields that are now open.

SERVEL, Inc.

ELECTRIC REFRIGERATION &
AIR CONDITIONING DIVISION
EVANSVILLE, INDIANA

Since a Service Firm Can't Boost Prices When Profits Are Low, It Must Analyze Operating Figures

(EDITOR'S NOTE: Since ceilings have been placed on the prices that can be charged for refrigeration and appliance servicing work, the matter of proper accounting and operating analysis of service operations has taken on much more importance. In the following article Mr. Roberts points to some of the problems that must arise because of price ceilings, and indicates some general procedures to be followed.)

By Arthur Roberts

How to make a profit on service under price ceilings is the big problem of dealers in air conditioning and refrigeration. Many are perplexed and flirting with hazards because they are operating without plan, dangerous enough in days before Pearl Harbor and certain to wreck sabotage on service profits today. We have formulated a plan for refrigeration servicing dealers to follow, based on a comprehensive appraisal of the situation and conferences with numerous eastern dealers who have given considerable thought to war economy problems.

First, revise your method of comparative studies. Heretofore, the wise dealer checked operating figures against previous months or years to estimate the adequacy of current costs, overhead expense, margin and net profit. Today, that is out.

The peak figures on service in March are your yardsticks. If you

started operating on a budget at the beginning of the year, discard it as a guide, but use it as a historical reference to note differentials between operations under ceilings and results that might have been, had OPA regulations not been decreed. The nearer you get to budgetary figures, the better your managerial efficiency, but a budget prepared at the end of 1941 or before March 1942 will hardly serve as a dependable guide to operations under ceilings.

Next, make up a profit and loss statement on the service business done in March. These figures form the basis for current computations from now until the lids are lifted. If you keep accurate accounting records, this is simple enough. If you have tolerated a defective system of recording or no system at all, prepare a synthetic statement to the best of your ability from invoices, job records, check book, purchase

orders, etc.

Go Over March Figures

Start with the March sales figure on service, then deduct the cost of sales to arrive at the margin of profit. If you had taken inventory of parts and supplies at the beginning and end of March or use stock control, you are in a preferred position to arrive at accurate cost-of-sales figures. Many dealers in the past have been satisfied with annual inventories but they should inventory the service department monthly from now on.

Obviously, you must have some standard of measurement to determine whether you are operating your service department in the safety zone and the March profit and loss statement is that. It provides ratios that will tend to remain stationary for the duration unless you take steps to change them. If the net profit is ample, it will be your job to see that current monthly ratios approximate the March ratios.

If ratios for a current month show substantial variation for the bad, you can begin immediately applying correctives. Hidden losses will not go on indefinitely, endangering survival.

Because flat rate prices are ceilinged and the pricing method on estimated jobs is frozen as of March, you are not likely to exceed the March percentage of margin. It will tend to remain stationary until the lids are lifted because the cost of materials for service and accessories can't be upped over March peaks by suppliers or to your customers and there is every indication that labor will be stabilized, at least, so they say at the OPA offices.

The normal margin may be reduced for those dealers obliged to pay March wholesale prices for current stock replacements that are higher than prices paid for supplies bought before March, nevertheless, only a comparison with the base-period statement will disclose the extent of this reduction so that corrective action can be taken before too late.

Remember, you can appeal to the OPA for a roll-back if prices are unprofitable but you've got to know whereof you speak and a systematic comparison of current operations with the base-period figures is essential to this objective.

Monthly Statement Important

From our experience, we find that margins on service fluctuate for many servicing dealers, month-to-month, usually those who prepare profit and loss statements only annually or semi-annually, are the worst victims of margins that vacillate, and they neither know nor seem to care whether certain months show red as long as the year, as a whole, shows a profit. A more critical appraisal of operations must be instituted from now on. With service margins restricted because of ceilings, and other wartime controls, it is more difficult to operate profitably today, and you can't afford any "off months."

Once the March figures have been compiled on service, analyze the statement. If your margin was adequate to cover overhead expense as pro-rated to the service department, you are in a favored position, the more net, the better.

If your March margin was tight, you can't do the normal thing and raise selling prices on flat rate service or change the pricing method on estimates used in March in order to take up the slack but good managerial maneuvering may give you the "all-clear."

One way out is to cut overhead under the March allocation to the service department. If you can't, you just can't, but you never know until you have the figures before you and try to prune them.

Many dealers have surprised themselves on their ability to effect economies when they went about it systematically. If you can't cut overhead to permit a satisfactory dollar profit, you must increase your dollar margin by increasing service sales with better advertising and selling promotion. Quite obviously, you can't operate on the same basis you did in March, because if this month shows a loss on service and you freeze operations to its figures, you will lose money every month under ceilings. Moreover, unless you use the base-period figures as a guide or budget to subsequent operations under ceilings, you will be working without plan. Even if the base-period statement shows a loss on service for March, you've got to get the bad news first before you can navigate safely.

Secret Is In Expense Itemizing

Check March expenses closely. Include every item. Make sure that taxes, mortgage interest, depreciation, allowance for loss on bad debts and service supplies, insurance, etc., are properly pro-rated per month and then allocated correctly to the service department.

Dealers who have depended, in the past, on an annual profit and loss statement exclusively, should be especially careful in this regard. Do not omit such items because you did not pay for them in March or have always made journal entries at the end of each year for such internal expenses as depreciation. Pro-rate such items if you have already paid them and accrue them if unpaid.

By this we mean, if insurance expense of \$240 was paid in January for a year's premium, pro-rate 1/12, or \$20, to March. If taxes were due in June for the one-half year, \$270, include \$45 as the March allocation, whether paid or not. Accrue payroll.

March ended on a Tuesday in 1942, hence, charge Monday and Tuesday payroll expense to March, even though payday came the following month. Include estimates for March 1942 income tax, pro-rated for that month and the proper share allocated to the service department. In short, see that your March figures on service sales are accurate because they form the base-period record, against which you should check operations month-to-month under ceilings.

Once your minimum expenses per month have been determined and the March margin percentage on service sales computed, you can budget your

monthly sales quota under ceilings, being sure that the margin in dollars pays the current overhead month-to-month, so let's say that your overhead on service has been budgeted at \$300 monthly.

Cost of Sales Factor

If the March margin figured 50% on service, then the cost of sales was 50%, because sales less cost of sales always leaves the margin, and under price ceilings, your business must approximate these same ratios, or you must sell \$600 in service or repairs monthly to pay the overhead (50% of \$600 sales is \$300, the aforesaid budgeted overhead).

Plan future operations under ceilings with such base-period figures as guides. Try to make a reasonable profit above overhead if you can, but your first objective should be to remain in business without loss until ceilings are lifted in order to be in a position to get your share of post-war prosperity when it arrives. However, the dealer using March 1942 operating figures on service to pace his monthly operations under ceilings will stand a better chance to have something in the till when the war ends. Don't forget to include adequate salary for your own services under overhead.

Service sales do not run evenly, month-to-month, as a rule, hence, some months the overhead exceeds margin, resulting in loss. In other months, sales and profits run above average, making up these losses. Under price ceilings, make every effort to keep the overhead percentage to sales normal and this should not be hard to do on service because it will run much heavier than normal for the duration.

Permit No 'Bad Months'

Average up your service sales per month for the past three years to determine fluctuations monthly. If past records show below-average or loss months, do your best to exceed these experience figures because they are your vulnerable spots.

The plan offered here is no cure-all for the servicing dealer's war economy ills but it does provide a reasonable base upon which to gauge operations under price regulations and it points your nose in the right direction. Now and during the post-war period, you must plan your work and work your plan in accordance with a pre-determined formula. The old slaphappy methods of doing business are gone with the wind and dealers are no exception.

From our field studies and accounting commitments in the refrigeration field, we find that few dealers are using the March profit and loss statement as a yardstick with which to measure service activities under ceilings and this is a hazardous omission. Some are working on budgetary estimates established prior to March and based on the previous year's business, another procedure stuffed with dynamite for those who want to get a rationalized perspective of operations today.

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IF YOU'RE WORKING WITH ALUMINUM,

you should have this book --

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WELDING AND BRAZING ALCOA ALUMINUM

Here's a book of data designed to meet the needs of the practical man—the welder—who is working with Aluminum Alloys. It describes in detail the practices now widely employed for joining Aluminum parts by gas welding, arc and resistance welding, and by brazing.

This book is planned to assist the war effort by making every welder more proficient at his job. Typical subjects covered are: Welded joint

design—preparation of parts—types of welding equipment—electrodes and fluxes—tip selection and flame adjustment—inspection and finishing—strengths of welds.

Joining Aluminum Alloy parts by welding and brazing is readily mastered with knowledge like this at your command, plus a little practice.

You may have this book free. Use the coupon to send for your copy today.

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ALCOA
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'What the Quartermaster Corps' School of Refrigeration at Camp Lee Has Meant to Me'

By Private Lloyd W. Walker

Prior to my coming into the U. S. Army in the present emergency I had a background of 17 years of practical refrigeration work. My interest in electricity and things mechanical, however, dates back to more than 30 years ago. In 1925 I had my first experience with electrical or mechanical refrigeration when my employer took on the Kelvinator Refrigeration Sales and Service Agency.

I was employed at the time as oil burner salesman, supervisor of installations and service man. This kept me pretty busy during the winter months, but not busy enough in the summer, so I took over the sales, installation and service of the Kelvinator Refrigeration line. In order to familiarize me with the product and how to install and service it, I was sent to a Kelvinator Refrigeration school for one week. I returned to my duties quite bewildered but game. From then on I learned refrigeration the hard way.

REFRIGERATION VETERAN

In the course of time I went into business for myself, still handling the Kelvinator products and also branching out into the servicing of practically all kinds and makes of refrigeration systems. As my business grew I was forced to employ help. It was difficult to find young men, properly trained, so I put on young men just out of trade school who had some knowledge of elementary electricity, and proceeded to train them my way. This was a long drawn-out process requiring training for about two years before they were capable of going out on jobs "on their own." This was not only a loss of my valuable time and money, but kept the embryo service man from maturing as rapidly as he should, entailing also, a loss to him of both time and money.

Then came World War II. My help left to join the armed forces of our country, and it wasn't long afterwards that I followed them.

HE ENLISTS TO LEARN

I had read in the newspapers and magazines and had heard over the radio that Uncle Sam needed refrigeration mechanics. After spending much time in research trying to fathom the wonders of Government "red tape" and many sleepless nights weighing the impassioned and breath-taking stories of recruiting officers of the Army, Navy, Marine and Coast Guard, and trying to picture myself the Admiral-General or "what-not" they told me my mechanical genius rated, I finally enlisted in the Army—in which, incidentally, I had served overseas in World War I.

I was prompted to enlist in the Quartermaster Corps of the Army,

Graphic Instruction at Army School



The student of refrigeration must have a detailed knowledge of all the parts of refrigeration units that he will later encounter in the field, and at Camp Lee's Quartermaster Replacement Training Center, graphic instruction is constantly used to bring emphasis to bear on important details. Here Sgt. William Buryard calls attention to an automatic semi-commercial control mounted on a display board with numerous other types of controls used in army refrigeration.

Army Adds To His Knowledge



Quartermaster fixed and mobile refrigeration units.

The classes are divided into groups, depending on the number of weeks they have been in school. Each group works out and discusses its own assigned experiments. Once a week a written test is given on subjects covered during that week. The papers are marked by the instructors and returned to the students, enabling them to check their progress.

I know that when I have completed the course, I will be better fitted to serve my country. I feel that what has been taught me at Camp Lee's Refrigeration School will prove a distinct advantage to me when I return to civil life after the war is won. I also feel that by using the methods learned at Refrigeration School I will be able to train a competent organization in far less time than I ever dreamed possible.

Laura McCall Awards For Home Service Work To Be Granted Again

NEW YORK CITY—To encourage and call public attention to work of Home Service departments in private utility companies throughout the country, McCall's magazine through the Edison Electric Institute is sponsoring the Laura McCall award of an engraved plaque, four illuminated parchments, and a total of \$225.00 in war bonds and stamps.

These prizes are to go to the Home Service departments and department directors who during 1942 made the most outstanding contributions to the war effort through highlighting information on nutrition and

its relationship to civilian health; in stressing care and maintenance of electrical household equipment; in fostering public compliance with blackout and dimout regulations affecting domestic lighting; and generally advancing the benefits of efficient electrical living.

Companies entering are to submit a report of 2,000 words or less, together with samples of printed material used and photographs of results if desired. Reports are to cover these four classifications, worth indicated weighted merits:

1. Planned 1942 war-time program of the department; 25 points.
2. Activities to further electrical living and good-will; 15 points.
3. Actual progress made in accomplishing these objectives in 1942; 50 points.
4. Summary of accomplishments of average department worked during 1942 (divide total accomplishment of department in each activity by average number of workers); 10 points.

Each report also must contain a foreword telling:

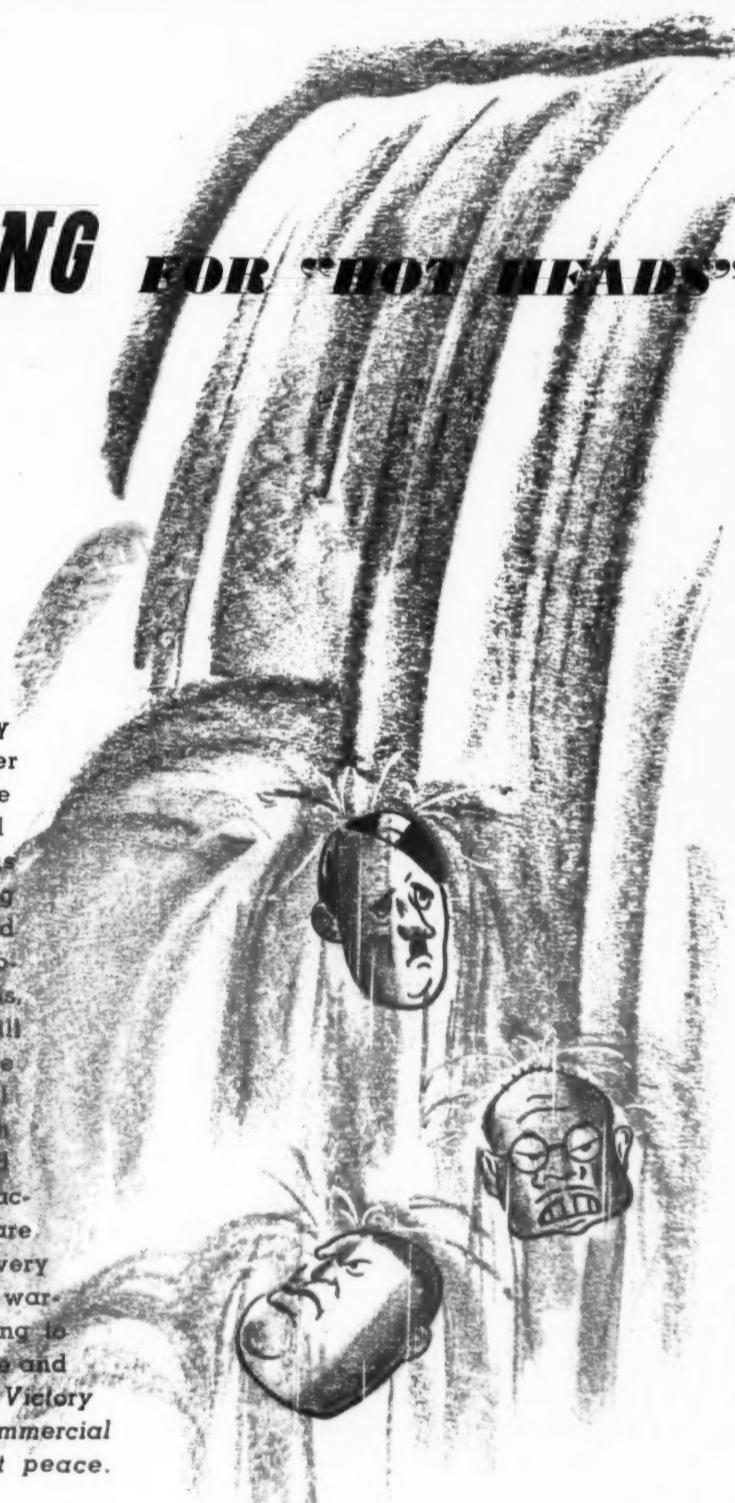
1. Total number of residential customers Dec. 31.
2. Brief description of territory served—concentrated or scattered.
3. Number of company offices from which activities were carried on.
4. Joint activities with dealers or straight company operation.

Contest period will cover the calendar year 1942 and contest material must be received at offices of Edison Electric Institute, 420 Lexington Ave., N.Y.C. on or before March 31, 1943.

The commercial director of the Institute will be among judges. Accomplishments of each Home Service department are to be considered with respect to size of organization.

SURE COOLING FOR "HOT HEADS"

Machine tool cooling is pushing American war output to Victory peaks. For example, by holding the temperature of the coolant constant, the capacity of precision thread grinders is stepped up approximately 20%. It's possible to work to closer tolerances and maintenance costs are substantially reduced. Universal Cooler units are among the first to thus help keep vital machine tools working "around the clock," accurately and at top speed. And while this development now counts most against the Axis, it also is speeding the day when it will count more for American peacetime production. ★ Units for machine tool cooling are but one way in which Universal Cooler's 20 years devoted exclusively to the design and manufacture of automatic refrigerating units are "at work" for America at war. In every department at Universal Cooler, war-gear precision production is adding to the previous storehouse of experience and equipment with this objective: Better Victory weapons NOW . . . advanced commercial refrigerating units for a world at peace.



THROW YOUR SCRAP INTO THE FIGHT

UNIVERSAL COOLER



UNIVERSAL COOLER CORPORATION • Automatic Refrigeration since 1922

MARION, OHIO • BRANTFORD, ONTARIO

The Priorities Quiz

(AIR CONDITIONING & REFRIGERATION NEWS, with the aid of a man who is actually engaged in handling much priorities work, will attempt to answer questions from readers about priorities problems. The editors will not guarantee to answer all questions, nor can they guarantee that the answers will be legally perfect, but an effort will be made to provide a guide to correct procedure wherever possible.)

Orders L-219 and L-63

Q. Does Limitation Order L-219, "Consumer's goods inventory Limitation Order," supersede L-63, the "Supplier's inventory Order" under which we have been operating since April of last year?

A. No, it does not. The order itself states that nothing therein shall be construed to relieve any person of the duty of complying with Limitation Order L-63. You are, in fact, therefore, compelled to comply with the provisions of both L-219 and L-63, if you come within the definition of both orders.

All consumers goods are not necessarily covered by the L-219 Order. It is important for merchants to read carefully list "A" containing lines of goods which qualify merchants for exemption from the restrictions imposed by the order. In fact, any merchant, 50% of whose aggregated net sales of all kinds of goods during his most recently completed inventory year were sales of goods listed on list "A" of the order, is exempted from the restrictions of L-219.

Included on list "A" is this item, "Supplies as defined in Limitation Order L-63 concerning which the merchant is required to keep records

on Form PD-336." If, therefore, more than 50% of your sales during your most recently completed inventory year were items covered by L-63 and you keep a record on Form PD-336, you are exempt from L-219.

Priorities by Telephone

Q. I understand preference ratings can now be certified on telephone and telegram orders. Can you give us the exact procedure required?

A. On telegraphic orders you must include the following certification in the message: "Ratings indicated are certified pursuant to Priorities Regulation No. 3." Nothing further need be done to properly certify the rating.

On a telephone order if you must have shipment within seven days, you may, if you are an authorized official of your concern, extend a rating merely by stating that the rating is regularly certified. However, on telephone orders of this nature, you must within seven days send a written confirmation of the order with a proper certification endorsed thereon. If you do not properly confirm your order with a certification within seven days, your supplier is forbidden to accept any other orders from you or deliver any

further material to you until the confirmation is received.

Allotments on 'B' Items

Under CMP, as I understand it, allotment numbers will be passed along from prime contractors to their suppliers for the purpose of enabling a supplier to secure material necessary to fill the prime contractor's orders. However, CMP also says that a producer of items on the B product list will receive his allotments of materials directly from the WPB. Does this mean that a prime contractor will not pass allotment numbers along to people who supply him with B items?

A. Allotment numbers must be passed along by prime contractors and other prime consumers to all of their suppliers of items on the B product list. The allotment number serves two purposes. On orders placed with the producers of Controlled Materials such as a brass mill, the allotment number indicates the month in which that material must be produced and shipped by the mill. Allotment numbers placed on orders for fabricated items or B product items indicate the month in which shipment of that B product item is to be made. In other words, an allotment number will serve as a production schedule for raw material items and as a shipping schedule on fabricated items. Acceptance of an order with an allotment number, therefore, implies that delivery will be made on the specified date. Under CMP, therefore, an order with an allotment number should not be accepted by a supplier unless it can be shipped within the time specified by the allotment number.

Material Obtained on Priority Can Now Be Used For Purposes Other Than Are Prescribed

WASHINGTON, D. C.—By an amendment of Priorities Regulation No. 1, issued today by the War Production Board, persons who have purchased material with the assistance of preference ratings may, under certain circumstances, sell it or make use of it for purposes other than the one for which it was originally obtained.

As amended today, the basic document of the priorities system now provides that, if for any reason material obtained with priority assistance or by allocation cannot be used as first intended, the owner may:

(1) use it to fill purchase orders placed with him which bear a rating of AA-5 or higher, or a rating at least as high as that upon which the material was obtained, provided such use is permitted by other regula-

tions and orders controlling the production or distribution of the particular material or item;

(2) use it for his own needs, if he has been authorized to obtain material for such use by applying or extending a preference rating of AA-5 or higher;

(3) re-deliver the material to the person from whom he purchased it.

In case an owner is not able to use or dispose of material in any of the above ways, he may file a report with his WPB regional office, which will assist in redistribution of his property.

Principal effect of today's amendment will be upon finished products and subassemblies, sale of which is not covered by the terms of Priorities Regulation No. 13.

All Service Sellers Subject to Regulation 165 Now Automatically Licensed Under the Order

WASHINGTON, D. C.—License requirements for service sales were made more far-reaching Dec. 31 when changes in sections 1499.111—Licensing, and 1499.113—Enforcement, of Maximum Price Regulation 165—Commodities and Services—became effective.

Amendment MPR 165 now requires a sales license of every person selling any service for which a maximum price is established under MPR 165 in its present or hereafter amended form or in any price regulation now or hereafter issued or amended by OPA which makes these MPR 165 license requirements applicable by referring to them in provisions of the regulation.

Originally, only persons subject to MPR 165 and only consumer services with prices fixed in MPR 165 required sales licenses.

Licenses for all services now covered by the regulation are granted to all sellers in the amended section as they were granted to qualifying sellers in its first form . . . effective either July 1, 1942—date on which MPR 165 took effect—or whenever a seller becomes subject to applicable

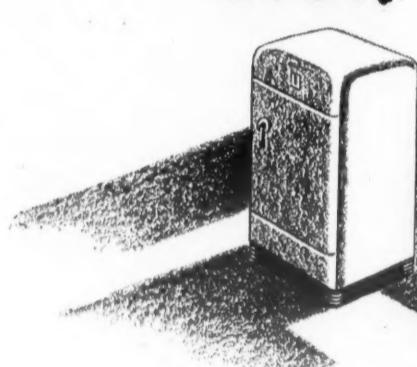
price regulations. In addition provisions of MPR 165 and provisions of every other price regulation to which the license requirements are made to apply are incorporated in the required sales license by the amended section. Violations of those incorporated provisions, it is pointed out, will constitute violation of the license.

Sales licenses are to stay in force so long as the governing price regulations remain effective unless suspended under provisions of the Emergency Price Control Act of 1942. During such suspension periods no person may sell the service covered by the suspended license, provides the amendment.

Amended section 1499.111 supersedes provisions of section 1499.16 of the General Price Regulation whenever it applied to persons selling services with maximum prices established in MPR 165 or in other price regulations that make licensing conditions of MPR 165 applicable by referring to them.

Changes in section 1499.113 of MPR 165 extend enforcement to cover the new requirements.

WILL YOU
EVER



SELL ANOTHER
REFRIGERATOR?

SHADOWS of oppression across the world can't obscure the white light of hope kindled by America's capacity to produce. Right, backed by production might, must in the end prevail.

When that happy ending comes, the fog of doubt will lift over both your refrigerator market and your sources of supply. Meanwhile, you can perform a needed service by keeping present units in repair, so that they will last for the duration. We at Tecumseh Products are still manufacturing units, but they are only for our Army and Navy and essential civilian needs. Your contribution to conservation—by keeping in repair America's refrigeration plant and thus prolonging its life—serves the national interest, profitably and patriotically.

TECUMSEH PRODUCTS CO. TECUMSEH MICHIGAN



Chieftain

"Time out" for Repairs

"Time out" for repair of refrigeration systems is serious these days when refrigeration dealers are hard pressed for men and material. Too long a "time out" may mean spoilage of food for our armed forces, our war workers, our families.

In the interest of conservation of time and in the education of new service men entering the refrigeration field, we have prepared a

"Service Analyzer", (Form 1147) describing troubles encountered in refrigeration systems, their symptoms and probable causes. Also available is a bulletin on "Operation and Testing of Thermostatic Expansion Valves", (Form 1098).

This information will help you cut down "time out" for repairs. Write for your copies today.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

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Failure To Give Small Business Bigger Part Of War Effort Treated 'Threat To Democracy'

But Army Says It Is Spreading Contracts on a Much Wider Basis; More Sub-Contracting Urged

NEW YORK CITY—Increased allocation of war contracts to smaller plants is necessary to save America from a changed government and a dictatorship, Lou E. Holland, WPB deputy administrator in charge of the Smaller War Plants division, warned in a recent talk here. A report of progress being made somewhat brightened his remarks.

Mr. Holland's dark claims about the threat to democracy were made at a luncheon given for him by the Advertising Federation of America at the Advertising club.

"If you destroy small business in America you will also destroy big business, and if you can do this it will mean a definite change of government. Then will come your dictator," he told the meeting.

PRODUCTION CONCENTRATION

He then explained that while there are almost 184,000 manufacturers in the United States, 71% of all war contracts are at present going to 100 industrial concerns. Although many large organizations do considerable amounts of subcontracting and thus use facilities of thousands of small plants, Mr. Holland said, he also pointed out that many plants had been forced to close because they could not obtain material.

Mr. Holland, who almost 20 years ago was president of the Associated Advertising Clubs of the World, fore-runner of the federation, declared that his present job was the most difficult he had ever had and "probably the worst one in Washington."

More cheerful words were delivered by the Smaller War Plants chief in a second address made before a joint policy meeting of the War Department and the War Production Board at the Commodore hotel.

He advised this group that the War and Navy Departments and WPB had worked together to build a firm basis for the program now in operation and that results were already beginning to show.

"No politics can prevent us from going forward," he asserted.

He mentioned, too, current Army-Navy cooperation, explaining that it involves changes in a government procurement policy that has been going on more than 100 years.

Reminding the group that it takes time to develop a sound program and put it into operation, Mr. Holland added:

"We have worked out a program that has been approved by the Army and Navy, we have their excellent

cooperation, we've built on a firm foundation and you can't rock this foundation."

A report from the Army given by Col. Fred C. Foy, chief of the Small War Plants branch in the Purchase division of the War Department's Services of Supplies, helped bear out Mr. Holland's more optimistic assertions.

ARMY MAKES AN EFFORT

During November, the Army's prime contracts with smaller plants showed a 14% increase over the number placed in September, Col. Foy said. The military spokesman also revealed that in November the Army alone placed \$550,000,000 in orders with plants employing less than 500 workers, and of that amount 18,000 prime contracts totaling more than \$200,000,000 worth of business went to plants with fewer than 100 employees.

Following initial addresses, a discussion was directed by Major Alvin J. Hewitt, Col. Foy's assistant in Washington. Reports made during this period on smaller war plants activity in various areas revealed results illustrated by these examples:

A former automobile plant near New York City was reorganized as an assembly plant for bridge equipment, resulting in 22 subcontracts to operators of small plants.

Each month 3,000,000 pairs of shoes, which could be produced by 12 or 14 large concerns, are purchased from 60 smaller plants at an added cost to the government of \$100,000 as authorized in the Congressional law setting up the small plants program.

One quartermaster depot is awarding 52% of its contracts to companies employing less than 100 workers each, 25% of its contracts to groups employing 100 to 500 workers, and the remained to larger plants.

'DECENTRALIZING' PROGRAM

Major Gen. C. L. Corbin, director of procurement, assistant to the Quartermaster General, Washington, revealed that quartermaster depots in general are decentralizing operations to promote the smaller plants program. He explained that where formerly one depot would buy a certain item for the entire country, that item is now being purchased by a number of depots.

He told how the Philadelphia depot had spread the purchase of 3,000,000 pairs of trousers among 78 contracts in 26 states instead of following a plan to purchase that same quantity through seven contracts in three states.

One phase of WPB's job is to further sell the idea of subcontracting to prime contractors, Major Hewitt told board members present. It was further pointed out as a formulated policy that in the joint activity of WPB-War-and-Navy-Departments, prime contractors will be called upon to coordinate their sub-contracts through WPB.

Illinois Locker Renters Given An Extension On Storage of Game

SPRINGFIELD, Ill.—Illinois citizens possessing cold storage lockers may have until March 1 to utilize the game meat as food, L. E. Osborne, director of conservation announced recently. As a wartime aid to those who have game in cold storage under state permits, Osborne directed an extension of storage privileges from Jan. 22 to March 1.

"Numerous requests have indicated that sportsmen who have legally killed and stored pheasants, quail, rabbits or other game, during the season, can best utilize this food by having more time in which to consume their supplies," he said. "This is particularly important right now due to the wartime meat scarcity."

Osborne warned that possession of migratory waterfowl in cold storage is governed by Federal regulations.

Ranco Is Selected For Army-Navy 'E' Production Award

COLUMBUS, Ohio—Ranco, Inc., making heating, ventilating, refrigeration, and air conditioning controls here, has been selected to receive the Army-Navy production award for outstanding performance on war work, Under-secretary of War Robert P. Patterson and Under-secretary of Navy James V. Forrestal have announced.

Employees of Ranco will be given individual Army-Navy "E" pins.

25-Inch Bolts Used In Grand Coulee Dam Are Frozen To Shrink

GRAND COULEE, Wash.—Shrinking by freezing of 156-pound bolts will be used here in construction of shafts for two 75,000-kilowatt generators being installed at Grand Coulee Dam.

The bolts, each 25 inches long and five inches in diameter, are larger than holes in flanges through which they must pass to hold together sections of the generator shafts.

To be fitted to size requirements, bolts will be boxed in several hundred pounds of dry ice for 12 hours. When removed their temperature will be about 80° below zero, it is reported, and the contracted bolts will easily slip through the flanges.

Manufacturers May File Export Prices With the OPA, Says BEW Announcement

WASHINGTON, D. C.—Manufacturers may file their export prices with the Office of Price Administration instead of submitting detailed price explanations on their applications to the Board of Economic Warfare for export licenses, it was announced today.

If the prices have been filed with OPA the applicant for an export license may write "Filed, OPA" and the date on which the prices were filed.

Permission for manufacturers to follow the new procedure was granted in response to requests for reduction of the amount of information which must be supplied with each export license application.

OPA pointed out that price statements filed there must contain all the information now required by the license application, or in the future, any that may be required. Detailed instructions for filing follow:

"Manufacturers may file export prices with the Office of Export-Import Price Control, Office of Price Administration, in lieu of answering question 17 of the present license application form (Board of Economic Warfare Form 119). If prices are filed, manufacturers may answer question 17 on this form by inserting the statement, 'Filed with OPA (date)'.

"The price information which is filed with the Office of Price Administration must provide the answers which would have been given to the

above question. These at present include the basic domestic price and the amount of premium, if any. The type of basic domestic price used as permitted under 1375.1 (b) must be indicated. Any new information regarding prices which may be required by subsequent revisions of Form BEW 119 must be added. Changes in prices as filed must be reported prior to or at the time such new prices are used on an export license application.

"It is particularly important that each commodity for which a price is submitted be accurately identified. Manufacturers numbers or other description may be used to assist the identification. In cases where grades, sizes, type of packing, type of container, number of units per container, etc., are pertinent, full details should be given. If the price of the commodity is subject to the control of a specific maximum price regulation, the classifications and descriptions in the pertinent schedule must be followed. The description of the article given on the export license application must correspond with that given in the list of filed prices so that the article to be exported may be identified on the manufacturer's filed list.

"It is necessary that unit prices be shown under question 15 on the export license application in order to reduce the amount of clerical work required in comparing license applications with the prices on file."

For the Duration

CURTIS REFRIGERATING EQUIPMENT

Serves Our Armed Forces

- First!

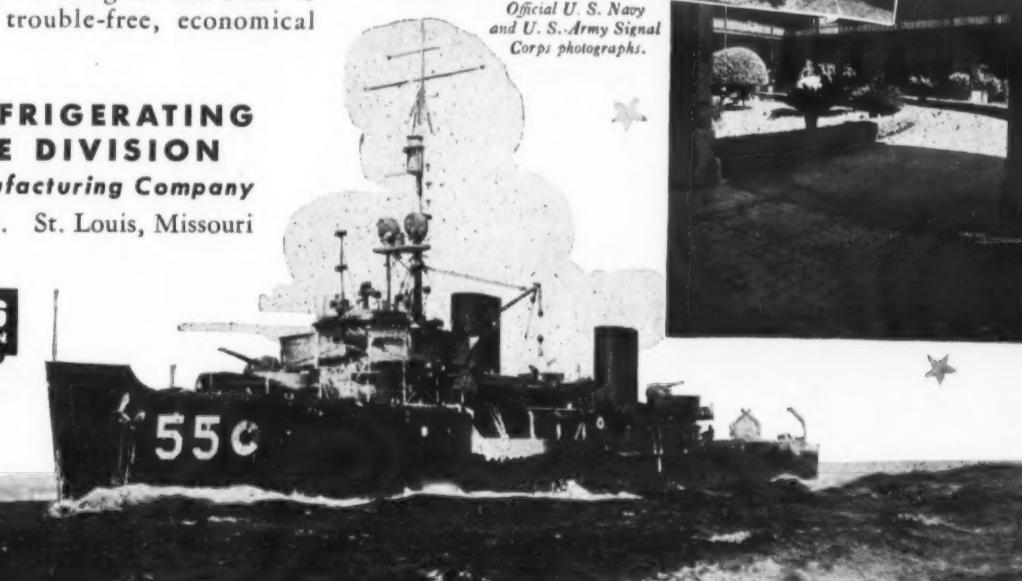
• CURTIS Air Conditioning and Refrigeration Equipment has followed the Armed Forces of the United States on both land and sea, in addition to serving war industries at home. Some of the innumerable applications include hospital operating rooms, blood banks, food preservation, simulating high-altitude, low-temperature conditions for the Air Forces in photographic work; in the production of aircraft engines, propellers, rivets, bomb sights, gauges, medicines, parachutes, synthetic rubber, and many other uses vital to America's War Effort.

We are proud that CURTIS Equipment is serving the war effort in such a wide variety of important applications, just as it has for many years served peace-time industries. We are proud of the background which has made this possible—88 years of successful manufacturing experience, advanced engineering, precision manufacture, and the use of the finest materials throughout.

All Curtis equipment is designed and built to deliver dependable, trouble-free, economical performance.

**CURTIS REFRIGERATING
MACHINE DIVISION**
of Curtis Manufacturing Company
1912 Kienlen Ave. St. Louis, Missouri

CURTIS
REFRIGERATION
AIR CONDITIONING
COMMERCIAL





GILMER BELTS

NOW that air conditioning and refrigeration have become Victory production tools, plenty of sales and service opportunities are open to wide-awake dealers.

Gilmer Belts will keep those new production tools on the go, and build goodwill for the man who sells them. Their rugged strength and long life keep things humming without a hitch. They're available now . . . order through your jobber.

L. H. GILMER COMPANY
TACONY, PHILADELPHIA, PA.

Refrigeration Skills Find a Ready Place In Conversion To War Production

WPB Copper Head Decries Statement Of Larger Supply

WASHINGTON, D. C.—Recent statements quoted in the press have conveyed the impression that the supply of copper is adequate to meet all military and essential civilian requirements. "Widespread acceptance of such statements would constitute a threat to our entire war production program. The supply of copper is not adequate and never will be while this war is on."

So said H. O. King, Director of WPB's Copper division last week in an official statement apparently aimed at countering some "unofficial" optimistic reports.

"A number of WPB limitation orders have eliminated the use of copper from thousands of civilian products. The Army and Navy have saved considerable amounts of copper by reducing their requirements wherever possible. A vigorous program of substitution has been carried on.

"Further, several hundred million dollars are being spent on facilities for new projects to increase production, while scrap programs have resulted in the collection of twice the tonnage which was expected at the beginning of 1942.

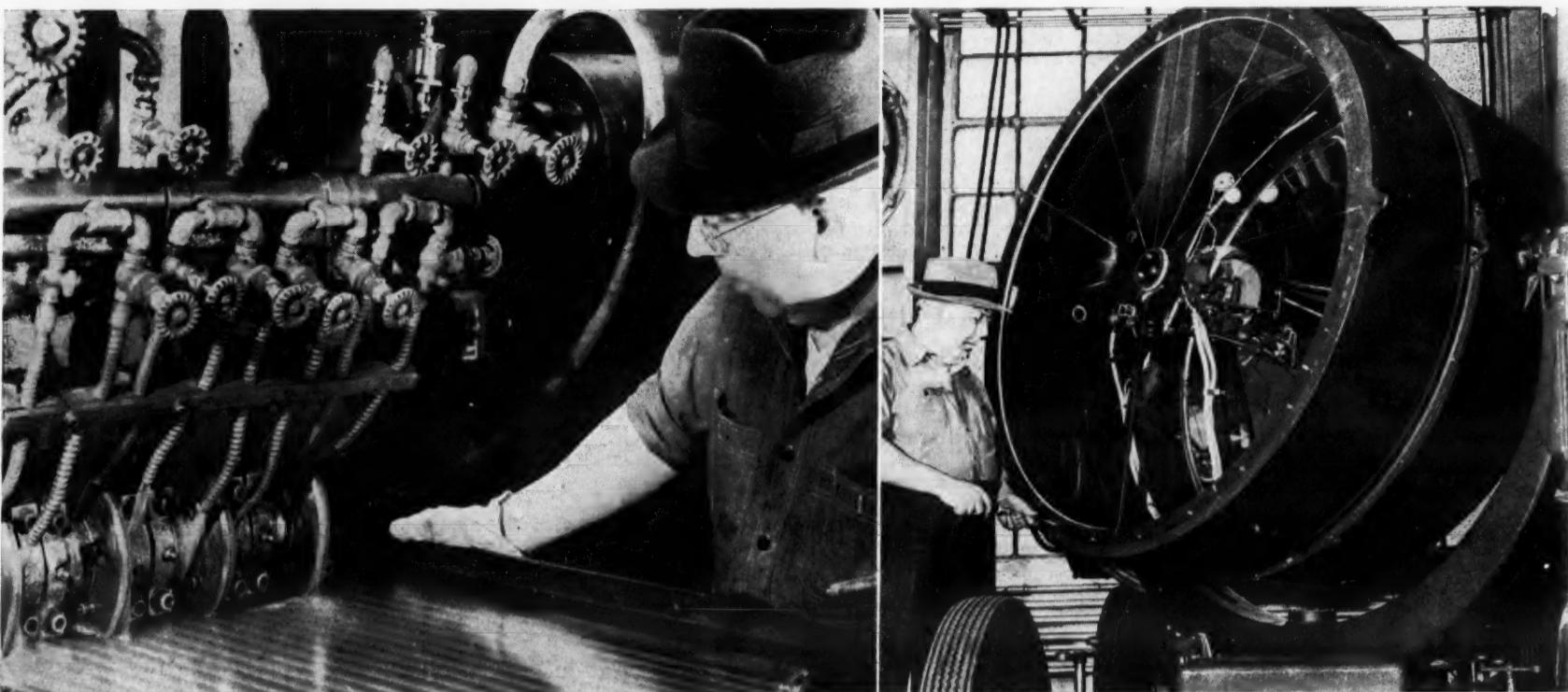
"Because some of these efforts have been successful, and have resulted in a reduction of the overall deficit is no reason for the relaxation of restrictions on use, or relaxation of our efforts to acquire every pound of copper wherever it is available."

Special 'Blood Bank' Unit Now In Carrier Line

SYRACUSE, N. Y.—A frozen blood plasma "blood bank" cabinet has been added to the Carrier Corp. line.

Powered by a self-contained unit, the Carrier "blood bank" is made in three capacities: 4½ cubic feet, 9½ cubic feet, and 12½ cubic feet.

From the World's Finest Consumer Products To World's Best War Materials



(Above) Edward O'Rourke, who did line welding on electric refrigerator condensers, is now working on the assembly of 800,000,000 candlepower, 60-inch anti-aircraft searchlights being made for the United States Army.

(Right) Gertie Sauborn formerly worked on silver-soldering tubes on float cases for refrigerators. Now transferred to war work, along with hundreds of other former refrigerator employees, she is doing her part by testing regulators being produced for U. S. Army and Navy bombers.

Her Skill In a 'Precision Job' Now Aids the War Effort



Nothing else fills the bill like the "RECALIBRATOR"

NOW that gauges and dial thermometers face harder and longer service, and heavier responsibilities, you have more reason than ever before to look for that "Recalibrator" screw.

It's the sign of an instrument that is accurate to begin with, and can be kept accurate always.

No one has ever found a way to build a gauge that can't be knocked out of adjustment, but . . .

—Marsh has found the one completely satisfactory way to do something about it. When a "Recalibrator" gauge is knocked out of adjustment, the twist of a screwdriver corrects it—actually recalibrates the gauge so it is accurate again at every point on the dial.

JAS. P. MARSH CORPORATION
2067 Southport Avenue, Chicago, Illinois



The "Recalibrator" is available on all Marsh Gauges—standard on all Marsh Dial Thermometers. It is typical of the advanced design, the helpful features you'll find throughout the broad Marsh line—all products of 75 years of specialization. Write for refrigeration catalog.

MARSH
Refrigeration Instruments

Refrigeration Industry Will Be Saluted by M-H Radio Program

MINNEAPOLIS—The mechanical refrigeration industry will be saluted in the "John Freedom" radio program of Jan. 27. Minneapolis-Honeywell Regulator Co. sponsors the program which is aired from 9 to 9:30 o'clock EWT.

The commercial announcements on the program will pay tribute to the role that the refrigeration industry is playing in the feeding of our armed forces, and how it is aiding the war effort.

The "John Freedom" program itself is a dramatization of current war episodes.

The program is broadcast regularly at 9 to 9:30 p.m. Wednesday nights.

Canadian Maritime Provinces R.S.E.S. Organized; To Cover A Wide Area

ST. JOHN, N. B.—A maritime provinces' chapter of the Refrigeration Service Engineers Society is being organized by A. J. Pike of this city. The chapter, open only to professional refrigeration service engineers, is to cover the provinces of New Brunswick, Nova Scotia, and Prince Edward Island, and the island colony of Newfoundland.

Preliminary meetings have already been held here and in Halifax, N. S., where addresses were given on the process of organization and the objectives to be outlined. Both meetings were attended by engineers from the cities in which they were held and from communities within a 75-mile radius.

Similar gatherings are being arranged for other key centers.

Superior PRODUCTS ★ ★ ★

★ ★ ★ FOR YOUR Defense JOBS

Increased refrigerated space for the accelerated production of perishable foods places a heavy responsibility upon the refrigeration industry. Shortage of metals condemns waste and inefficiency. Do your part to conserve materials. Design to produce more refrigeration per watt hour. Select equipment which requires a minimum of service. Specify SUPERIOR—the quality buy-word of the industry.

DIAPHRAGM PACKLESS VALVES



Entire internal assembly removable for soldering or inspection. Equipped with famous pressure cup below diaphragm. Two and three way. Flare sizes 1/4" to 3/4"; Sweat sizes 1/4" to 3/4".

PACKED AND PRESSURE CUP VALVES



Flare and sweat sizes 1/4" to 3/4" (two and three way) have hex seal cap. Sweat sizes 1/4" to 2 1/2" (globe) have wing nut seal cap. Internal assembly (all sizes) removable for sweating to valve body.

REFRIGERATION is Vitally Essential to Our National Defense Efforts ★

CHECK VALVES



Very sensitive springs. Less than 5 ounces pressure drop. Positively will not chatter or hum. All internal parts easily removable for sweating or inspection. Sizes 1/4" to 3/4". Flare, 1/4" to 1 1/2" Sweat.

LIQUID INDICATORS



With or without seal cap. Flare sizes 1/4" to 3/4"; Sweat sizes 1/4" to 1 1/2". On 1/2" Sweat to 1 1/2" entire upper assembly may be removed as a unit to facilitate soldering of refrigerant lines to connections.

Refrigeration—Food Preservation and National Defense are Synonymous ★

DEHYDRATORS



Silica-Gel or Activated Alumina. Refillable and non-refillable. 1/4" to 3/4", 1/4" to 5 H.P., 2 to 60 cubic inches.

MANIFOLDS



With packless or seal cap valves. Two to six valves; 1/4" to 2 1/2" valves, with or without end fittings. Sweat or flare.

FILTERS



Highly efficient sack type filter. Sizes 1/4" SAE to 2 1/2" SAE. One to five horsepower.

Don't take chances with the Nation's Health—do the best job possible ★

FITTINGS



Union, adapting, elbows, tees, crosses, caps, etc. 1/8" through 1". Unique design gives highest capacity per unit size. Sweat or flare connections. 4200 to 9700 BTU per hour.

HEAT EXCHANGERS



Combination Heat Exchanger and Accumulator. From one to ten tons. Especially recommended for low temperature installations.

FLARE NUTS



Bass and steel. Long and short proof. Forged and bar stock.

For complete details—see your Jobber or write for catalog

SUPERIOR VALVE & FITTINGS CO.

★ PITTSBURGH ★ PENNSYLVANIA ★

U. S. Steps Up Icebox Production: Canada Limits Its Ice Deliveries

WASHINGTON, D. C.—January through March 1943 production quotas for domestic ice boxes are assigned to 19 refrigerator manufacturers in Schedule II to Supplementary Limitation Order L-7-c issued by Ernest Kanzler Jan. 2.

The boxes may be produced in the following quantities:

Alaska Refrigerator Co., Brooklyn, N. Y. 4,000
American Furniture & Fixture Co., St. Louis, Mo. 5,000
Atkins Table & Cabinet Co., Brooklyn, N. Y. 3,000
Brunswick Refrigerator Co., Brooklyn, N. Y. 4,000
Coleman Furniture Co., Pulaski, Va. 10,000
The Coolerator Co., Duluth, Minn. 33,000
George H. Dean, Inc., Norwood, R. I. 300
Dratch's Victory Refrigerator Box, Brooklyn, N. Y. 2,500
Fy Boro Metal Products Co., Inc., Brooklyn, N. Y. 5,916
Ice Cooling Appliance Corp., Morrison, Ill. 20,028
Iceland Refrigerator Co., Inc., Brooklyn, N. Y. 3,600
Maine Mfg. Co., Nashua, N. H. 13,500
Modern Refrigerator Co., Brooklyn, N. Y. 5,000
National Glass & Mfg. Co., Fort Smith, Ark. 1,100
Progress Refrigerator Co., Louisville, Ky. 5,000
Sanitary Refrigerator Co., Fond du Lac, Wis. 14,496
Seeger Refrigerator Co., St. Paul, Minn. 5,000
Success Mfg. Co., Gloucester, Mass. 5,000
Ward Refrigerator & Mfg. Co., Los Angeles, Calif. 9,330

A total of 149,770 domestic ice boxes will be produced during the first quarter of 1943 if these production quotas are met.

Prices Established On Trane's Special Heat Exchange Units

WASHINGTON, D. C.—Maximum price of specially designed heat exchange equipment manufactured and sold by The Trane Co. has been established by a recent Office of Price Administration order under Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other than Apparel.

The order specifies that the articles covered by this order (1) must be specially designed and not part of Trane Co., standard line, and (2) were not delivered or offered for delivery during March 1942 and the prices for which cannot be determined on the basis of prices of standard and special equipment in effect by the company in March 1942.

The list price of such equipment, to quote the order, "shall be determined by adding:

"(1) Cost of materials based on March 1942 prices, but not in excess of maximum prices permitted by any applicable regulation, schedule, or order issued by the OPA, to

"(2) Cost of labor based upon labor rates in effect in the Trane Mfg. Co.'s plant for any substantial portion of March 1942 for each class of labor involved, to

"(3) Overhead computed at the rate of 1.6 times the cost of labor, and

"(4) Multiplying the total of (1), (2), and (3) by the factor 3.6."



Who's Wasting Materials, Manpower Money, Tires and Gasoline Now?

(Concluded from Page 1, Column 4)

OTTAWA, Canada—Canada's ice industry has tightened its belt a notch following new government restrictions placed on cabinet making and ice deliveries, a Toronto News correspondent reports.

Just before Christmas, he writes, the Department of Munitions and Supply here announced that manufacture of wooden ice boxes and apartment house refrigerator cabinets was to be put on a permit basis. Wartime Prices and Tread earlier in the month had drastically restricted deliveries of ice to homes, commercial establishments, and hotels.

LIMIT ON MODELS

The new order regarding manufacture of wooden ice boxes prohibits any manufacturer from making more than two models of domestic ice refrigerators, and/or more than two models of domestic refrigerator cabinets it is explained. The refrigerators must have capacity for at least 75 pounds of ice.

Total weight of metal, including joining and fastening hardware, in any domestic ice refrigerator must not exceed 14 pounds if the ice capacity is less than 100 pounds, or 17 pounds if the capacity is more than 100 pounds. No metal may be used for the exterior surface, food compartment, or food compartment shelving. Moreover, all such ice boxes and apartment house refrigerator cabinets must contain insulating materials of a type and thickness approved by the government.

ICE DELIVERY LIMITS

Ice delivery was limited early in December, the correspondent states, to three times weekly to home, and once daily to commercial establishments and hotels with no deliveries on Sundays or statutory holidays, and no special deliveries. Only exceptions are deliveries to hospitals, railways, cargo and passenger boats, manufacturers and processors of food products for storage purposes, and to government wartime departments and the armed forces.

In addition, large ice distributors cannot use automotive vehicles for delivery unless at least 21,000 pounds of ice are delivered by that car each week while horse-drawn wagons are each required to deliver at least 15,000 pounds of ice weekly. Should the amount of ice carried in any one week drop below the basic amount, the average weekly total is taken into consideration.

Small distributors who own just one automotive vehicle and one horse-drawn wagon, or two horse-drawn wagons, are not governed by the regulation. Those subject to it, however, must keep records to send to Ottawa each month.

Because the order came into effect during winter when least ice is delivered, another clause in the regulation limits the number of automotive trucks used by any one distributor to the number he used during August, 1942. The regulation also provides for special dispensation.

The list price thus determined is f.o.b. point of manufacture and is subject to the following discounts:

(a) On sales to distributors successive discounts of 25%, and 20%, and 20%;

(b) On sales to jobbers successive discounts of 25% and 20% and 10%;

(c) On sales to building contractors and dealers successive discounts of 25% and 20%.

The order concludes with details of the records which The Trane Co. must retain for OPA inspection and the statement that the Office of Price Adjustment may adjust any price established under this order, or revoke or amend the order, at any time.

3 Fairbanks, Morse Plants To Get 'E'

CHICAGO—Three Army-Navy "E's" will be awarded during the coming week to the plants of Fairbanks, Morse & Co. at Beloit, Wis.; Freeport, Ill., Three Rivers, Mich.

Equipment built at the three plants of the company is used by the Navy, Army, Coast Guard, Maritime Commission, Air Corps, and the Treasury Department for Lend-Lease to the United Nations.

For many years, Fairbanks, Morse & Co. has devoted much of its engineering and production facilities to the production of equipment for our armed forces. After Pearl Harbor, the company immediately converted all of its manufacturing facilities to the making of vital war equipment.

Supporting the armed forces of this country in time of war is a strong tradition in this company. Since this organization was founded in 1830, they have been called upon to manufacture war necessities in four major wars.

Otto Klopsch Named To A.S.A. Committee

NEW YORK CITY—Otto Z. Klopsch of the Wolverine Tube division of the Calumet and Hecla Consolidated Copper Co. has been appointed a member of the American Standards Association's Subcommittee on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment.

To G-E Distributors and Contractors:

Below is the current message in General Electric's campaign designed to help you take your part in supplying the air conditioning and industrial refrigeration needs of war plants. This advertising appears every month in Time, Newsweek, Business Week and 20 publications covering the general manufacturing, food, aviation, textile, chemical, metallurgical, electrical and petroleum industries.

SABOTAGE ... from the air

Sharp . . . jagged . . . destructive! Not bombs. Merely little specks of dust . . . but far from harmless, as high-powered microscopes would show.

It is easy to imagine what damage these hard, jagged particles can do to precision finished bearing surfaces in equipment ranging from delicate instruments to heavy machines. When a highly finished part must be scrapped because of dust-damage, much more is lost than just a piece of metal. Many hours of expensive, painstaking labor are completely wasted.

One of the best defenses against dust-sabotage is air conditioning . . . the specially designed kind of air conditioning

which, through efficient air filtering and accurate control of temperature and humidity, is making possible precision tolerances never before attainable.

General Electric has taken an outstanding part in the development of this new air conditioning. Already, the war has taught us how to make equipment more compact, more flexible, and far more efficient. Required "climates" are faithfully

fully reproduced. When the war is over, air conditioning . . . better, cheaper, more universally used . . . will do much to make the world of the future happier and more useful for everyone. Then, as now—General Electric will be a leading source of all kinds of air conditioning.

Air Conditioning and Commercial Refrigeration Department, Division 431, General Electric Co., Bloomfield, N. J.

Air Conditioning by
GENERAL ELECTRIC

Air Conditioning & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, Founder

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Refrigeration Will Help Win the War

War Council Is Great Step Forward

FORMATION of the National Refrigeration War Council, composed of accredited representatives of the seven associations now found in the air conditioning and refrigeration industry, is a signal event. We hope that some day it will turn out to have deserved the phrase, "epoch-making."

As told on page 1 of this issue, it is comprised of the presidents (plus duly designated alternates) of the following groups:

Air Conditioning & Refrigerating Machinery Association.

American Society of Refrigerating Engineers.

Commercial Refrigerator Manufacturers Association.

National Refrigeration Supply Jobbers Association.

Refrigeration Equipment Manufacturers Association.

Refrigeration Service Engineers Society.

Standard Refrigeration Compressor Association.

Its declared purpose is:

PURPOSE FOR WAR COUNCIL COGENTLY STATED

"Bringing into focus and making available to our Government the cumulative knowledge and experience of the industry so that its complete resources may most effectively be utilized for the winning of the war and for the well-being of the public."

Some may wonder why the Refrigeration Division of the National Electrical Manufacturers Association is not

They'll Do
It Every
Time
By
Jimmy
Hatto



represented. Well, in the first place, it is merely a division, not an association, and could not speak for so vast and intricate an agglomeration as Nema.

Second, it consists of some (not all) former manufacturers of household electric refrigerators who are now entirely engaged in war work and are not in the refrigeration business at all.

Members of the seven bodies in the Refrigeration War Council may be engaged in war work, but they are also still making, selling, and servicing refrigeration products, too. As such, they have mutual problems that do not concern the Refrigeration Division of the National Electrical Manufacturers Association at all.

We think the entire industry should take off its collective hat to the public-spirited men who forgot past jealousies and competitive feuds to form the NRWC.

GETTING THEM ALL TOGETHER WAS REMARKABLE FEAT

The mere fact that the presidents of all seven of these groups put their feet under the same table and succeeded in achieving a meeting of minds is a much more remarkable and laudable fact than might seem apparent to the casual observer.

As readers of AIR CONDITIONING & REFRIGERATION NEWS well know, we have been campaigning editorially and otherwise since the spring of 1940 for such a Council. We have been present at most of the unsuccessful organizational attempts which have preceded this Event, and have helped set the stage for many of them.

In so doing we have learned at first hand many of the seemingly unsurmountable difficulties which have hitherto prevented the formation of such a Council. Many of these difficulties have been honest and sincere; some, regrettably, have been due to mutual suspicion and the vagaries of human nature.

That's why we are so impressed that the Council is now a *fait accompli*.

JOHN WYLLIE IDEAL MAN FOR COUNCIL CHAIRMAN

The men comprising the Council are to be further congratulated in having elected so able a man as John Wyllie their first Chairman. For more than a dozen years we have known John in his business capacities, and as a friend

and neighbor, and can testify to the soundness of his thinking and the earnestness of his idealism. He is a man who puts service above self, principle above profit, collective good above company advantage.

In its infancy the Council will need a strong hand at the helm to prevent its jittering around in circles. John Wyllie is just the man for the job.

Again, congratulations to all concerned.

LETTERS

NEWS STILL GETS TO PANAMA

The Panama Coca-Cola Bottling Co.
Panama, R. de P.

Sirs:

In spite of shipping difficulties and other things the News still reaches me here, and although nearly six weeks old it still contains much news which is very fresh and welcome.

Plenty of good luck to you.

Frank Dacosta

GREAT SOURCE OF INFORMATION

615 N. 76th St., East St. Louis, Ill.

Dear Folks:

Please pardon the delay—but here is my renewal subscription for one year to the News.

Indeed I would not be without the valuable information it affords—especially in these changing times.

One who is associated with the industry as I, greatly rely on what the News is. A great source of information when we need it.

James V. Farmer

CHRISTMAS GREETINGS FROM CUBA

Servicio General de Refrigeracion
Ave. Finlay (Zanja) No. 513
Havana, Cuba

Editor:

This era in which we live imposes upon us the concentration of united effort for the triumph of the United Nations in order to obtain a better world; but the meaning of Christmas makes us remember with gratitude our good relations.

It also offers us the opportunity to greet you with our sincere wishes for your happiness in the New Year.

A. Alvarez

FULL REPORTS ON GOVERNMENT RULINGS HELP SUBSCRIBER

Unit Air Conditioning, Inc.
37 W. 39 St., New York, N. Y.

Editor:

From time to time we have been prompted to write and compliment you on the splendid service you are rendering to the air conditioning and refrigeration industry. We are one company that reads your paper thoroughly on arrival and looks forward to its receipt every week. Your full report of the various government rulings during the war period has been particularly helpful.

Paul Harvey, Vice President

'DON'T LET ME FORGET TO RENEW SUBSCRIPTION AGAIN!'

64 West St., Tunkhannock, Pa.

Sirs:

Enclosed herewith check for \$4 for subscription. Also kindly send me pamphlet on ceiling prices on domestic refrigerators and tell me advantage if any of P-126 license, some houses say "yes" some "no" on P-126.

And "PLEASE" don't let my subscription run out again. Send through C.O.D. first. Thank you!

Best wishes for Happy New Year. You've a grand magazine, and are doing a great work. Keep it up!

R. B. Ward

THE SERVICEMAN IN POETRY

Cape Elizabeth Park
Dear Editor:

As I was thinking over the present situation the service man finds himself in I drummed up this little poem. You can never tell, the service boys may get a kick out of it. If it is of any use for publication in the News I would like you to use it.

Ed. Boudway

THE SERVICEMAN
R is for repairs we must effect.
E is for efficiency we must not neglect.
F is for fix we must do completely.
R is for repeats we must handle discreetly.
I is for inspections, installations too.
G is for griefs we have more than a few.
E is for empty as our parts bins show.
R is for reason, priorities you know.
A is for ability we also must show.
T is for tricks that make the old ones go.
I is for insistence to the W.P.B.
O is for objections they mail back you see.
N is for NEVER again you will say, but cheer up boys it will turn out O.K.

REFRIGERATION MEN ACTIVE IN MAKING TANK ARMOR PLATE

Standard Steel Spring Co.
Armor Plate Division
Detroit, Mich.

Dear Sirs:

Herewith please find check amounting to \$4 to cover my 13th or 14th renewal of Air Conditioning & Refrigeration News for 1943.

Even though I am no longer associated with the industry because of the war, it may be that when peace comes I may want to go back into this field again and the best way of keeping abreast of the times is through your weekly informative paper. After 14 years services in the industry (all with Kelvinator in various capacities in Michigan, Massachusetts, and Ohio) one is reluctant to give up the experiences and friendships formed over such a period.

As a newspaper man on a trade paper you may have missed the article in the "Detroit News" of Oct. 22 in which Michigan's great new industry "Armor Plate" was featured in a special write-up by James Sweenhart. Also "Time" magazine of Nov. 16 give this new industry a write-up in which it was disclosed how we have harnessed together 28 companies, with 31 factories in six states and produce 51% of all Tank Armor Plate made in the United States.

I have three other former Kelvinator men associated with me, all of whom you know, namely, J. W. Taylor, W. F. Fenske, and A. Cadieux who formerly did dealer contact work in Michigan.

Stop in and look us over some time.
H. F. Eildt, Production Manager

Refrigeration and Air Conditioning As a War Production Tool

By L. W. Clifford, Sales Development Section Supervisor,
Westinghouse Electric & Mfg. Co., East Springfield, Mass.

6. Cooling Coolants

In the War Plants of today where every available machine tool, almost without exception, works "around the clock," mechanical refrigeration has again proved its versatility and has provided the answer to many of the problems incidental to continuous, high speed operation of machine tools.

When machine tools are operated continuously at high speeds the temperature of the coolant (the liquid used to carry off the heat developed at the point of contact of the cutting tool and the material being cut) continues to rise until its heat loss throughout its path of circulation and through evaporation is equal to its heat absorption at the point of contact.

In some cases the coolant temperature may rise to over 130° F. and, from this resultant high temperature, many problems arise.

1. Rejects mount in work because of wide variations from standard tolerances. Work gauged hot will be undersized when removed from machine tool and gauged at room temperature.

2. Tool breakage from tool guides seizing increases as temperatures become normal.

3. Machine tool accuracy is lessened

as unequal expansion of tools, tool brackets and other machine parts result from contact with hot coolant.

4. Certain types of abrasive wheels deteriorate rapidly as increase in coolant temperature causes softening of the bonding compound in the wheel.

5. Many man-hours of time are lost because of the dermatitis rash which breaks out on the hands and forearms of the machine operators from the hot coolant splashing over them.

6. Much coolant is lost through evaporation as temperature reaches high levels. In the more volatile this loss is greater.

The answer to these serious problems is found in controlled removal of heat absorbed by the coolant, thereby holding the coolant at a temperature approaching room temperature continuously.

In actual practice this cooling is accomplished with two types of systems.

In one type the coolant from a battery of machine tools is piped to a central cooling source and, after being cooled, is pumped back to the individual machine tools comprising the battery.

For this type of system evaporative cooling equipment such as the Westinghouse EVS aquamizers, where the coolant is circulated through the inside of the coil circuit and the heat is absorbed by the air and water passing over the outside of the coil, can be used.

This type of system is also an excellent application for regular commercial refrigeration units. The units are connected to coils in the central coolant storage tank and, through their automatic controls, maintain the temperature at the desired point.

In the other type of system each machine tool has its own individual cooling system, where the condensing unit is located adjacent to the machine tool and the cooling coil immersed in the coolant in the sump on the machine tool.

As rates of production and hours of machine tool use have continued to increase the demand for automatically controlled coolant refrigeration systems has skyrocketed.

New Westinghouse Radio Program Has John Charles Thomas

EAST PITTSBURGH, Pa.—Westinghouse will re-enter radio on January 10, 1943, with a brand-new program featuring John Charles Thomas, the country's foremost baritone, who will serve both as master of ceremonies and as singer.

Supporting him will be Mark Warren's orchestra of 38 pieces and the Lynn Murray Chorus of male voices. Commercial announcements will be given in the form of dramatic stories by John Nesbitt, who is famous for his "Passing Parade" both in motion pictures and on the radio. The music on the program will consist of familiar songs and orchestra pieces of the tuneful sort that most people like to hear.

The program will normally originate in Hollywood; however, the first several programs will come from New York. Subsequent programs may originate either in New York or Hollywood, depending on the convenience of the artists.

The program will be broadcast over the NBC network of the 125 stations at 2:30 every Sunday afternoon, EWT, and will be a half hour in length. It will be produced through Young & Rubicam, advertising agency, who now produce a number of the most successful radio shows on the air. The program Westinghouse finally selected is the result of more than a year of study.

N.E.W.A. Moves Its New York City Office

NEW YORK CITY—National Electrical Wholesalers Assn. announces that headquarters here have been moved to 500 Fifth Ave., called the "best known corner in the world." Phone number, PENnsylvania 6-9444.

Sheet Board Ducts Save Critical Materials In Air Conditioning Jobs

SYRACUSE, N. Y.—How sheet board ducts and casing are being used in air conditioning installations to save huge quantities of critical metal, was described recently by T. M. Cunningham, construction manager of Carrier Corp.

Stating that American ingenuity has again proved itself in producing a substitute for a critical material, Mr. Cunningham points out that while the new sheet board does not entirely replace sheet steel, so great is its application that a recent duct system installation estimated at 300,000 pounds required only 66,000 pounds of sheet metal. Sheet boards were substituted for the remaining 234,000 pounds.

"In selecting a sheet metal substitute, several factors must be considered," the construction manager states. "These include availability of substitutes, ease of fabrication, strength and durability of finished duct or casing, rigidity of material, and surface resistance to air flow.

SUBSTITUTE REQUIREMENTS

"In addition to these factors, the substitutes for sheet metal must meet the following requirements: They must have a hard, smooth finish, and be non-hygrosopic, non-warping and non-inflammable. Preferably the material should be workable with tools usually used for sheet metal work so that the construction of the sheet board ducts will not involve a retooling program."

Listing Asbestos Ductboard, Asbestocote, ARA Board, Transite, Ma-

sonite and Hard Board as among the best known substitutes that meet these requirements, Mr. Cunningham said: "These boards, and numerous others available, have several advantages over sheet metal used in ducts. They are more rigid so do not require the 'cross-breaking' that is used in metal ducts. They have higher insulating value so the Btu loss or gain is less than in sheet metal ducts."

THICKNESS SPECIFIED

From experience in using the metal substitutes it is believed that 3/16 inch thick sheet board may be used throughout for some air conditioning systems, especially those ranging in size from 10,000 to 50,000 cfm. By using only one thickness for an entire duct system, the Carrier construction manager points out, fabrication costs are reduced and tooling problems are simplified, resulting in lower installation costs. In systems larger than 50,000 cfm, it is advisable to use 1/4 inch board to eliminate stiffening and other construction "extras."

The design of ducts made from sheet board is not different from those made of metal. The surfaces of the substitutes are not so smooth as that of sheet metal. Therefore, the resistance to air flow of the sheet duct is greater. However, it is not sufficient to make necessary a larger duct to compensate for the increase in resistance. As square vane elbows, and other "fittings" may be made in sheet board ducts,

the layout of the air conditioning system does not differ from that which has long been the practice in the industry.

Continuing, Mr. Cunningham says: "Supporting the sheet board duct is the same as that used with sheet metal duct with one exception. Conventional band iron or rod trapeze type hangers are used with the same spacing that has long been the practice of such work, but the supports are heavier since sheet board ducts are usually of greater weight than metal ones."

The Carrier executive believes the use of sheet board ducts will probably continue after the metal shortage no longer exists. "With air conditioning recognized as a vital war production tool, sheet metal requirements need not limit its use, for sheet board is a proved substitute. Americans again have demonstrated their ingenuity."

R. J. Quinn Is Promoted By Mathieson Alkali

NEW YORK CITY—Robert J. Quinn has been appointed assistant to the vice president-director of sales at Mathieson Alkali Works, Inc., here, the company announces. He will work with Esse E. Routh, elected vice president-director of sales following John A. Kienle's retirement from the position in November.

Mr. Quinn joined the Mathieson personnel in 1920 as western district sales manager in Chicago, and in 1923 was named assistant general manager of sales in the New York executive office. He received his chemical degree from the University of Illinois in 1912.

A Salute to the REFRIGERATION INDUSTRY

★ Wednesday evening, January 27th, at 9:00 to 9:30 P.M. Eastern War Time, on a coast-to-coast Blue Network broadcast, Minneapolis-Honeywell salutes your industry—the Industry of Refrigeration.

★ Your story of tremendous achievement in converting to war production will be told, together with the essential functions of refrigeration in speeding the war effort, feeding out armed forces, developing better war material and storing food for war and civilian use.

★ Don't fail to listen to JOHN FREEDOM Wednesday evening, January 27th, from 9:00 to 9:30 P.M. Eastern War Time over the entire Blue Network. See your local newspaper for time and station.

★ Minneapolis-Honeywell Regulator Company, Minneapolis, Minnesota — manufacturers of the Polartron System of Frost-Free Refrigeration.



★ ★ ★ ★

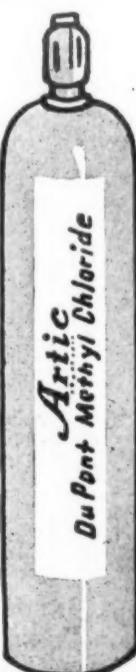
★ ★ ★ ★



FOR YOUR METHYL CHLORIDE NOW!

Ample supplies of Methyl Chloride are at present available for the charging and servicing of installations which may be constructed or serviced under existing War Production Board regulations. We expect to be able to fill the approved requirements of the refrigeration industry so far as material is concerned. It is suggested that you do not stock up unnecessarily.

Important! Cooperation in the return of cylinders will help everyone in the industry. Look through your stocks and warehouses for any empty cylinders, or cylinders which can be emptied . . . and return them promptly. Electrochemicals Dept., E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Delaware.



DU PONT
METHYL
CHLORIDE
Better Things for
Better Living
...Through Chemistry

Engineering, Layout Principles For Locker Plant Installation

Sawyer Provides Rules For General Estimating, Describes Details That Make For Better Operation

CHICAGO—Engineering, layout, and installation procedure for a refrigeration system with plate type evaporators to serve a refrigerated locker storage plant, were outlined to members of the Chicago section of the American Society of Refrigerating engineers by A. F. Sawyer, engineer for the Dole Refrigerating Co., at a recent meeting of the section.

"As evaporating surface for room cooling, plates are arranged overhead in banks; for fast freezing, they are set up as shelves with products placed directly thereon," Mr. Sawyer explained.

"The usual locker plant consists of a chill room usually held at 34 to 36° F.; a processing room for cutting and wrapping; a quick freeze cabinet or sharp freeze room where wrapped products are frozen; and a locker room for storage of the frozen packaged goods.

"Products ready for freezing are placed on freezer plates held to about —20° F. in the freezer room or cabinet. If a cabinet, it is usually built into one corner of locker room in three parts, front, side and top. One or two doors allow reach-in service, and inside are several freezer plates, 22 inches wide and 4 to 9 feet long.

"Plates are mounted on a pipe or angle iron stand with vertical spacing of 4 to 8 inches. Refrigerant circuit is always in series, and no more than 75 square feet of plate surface (figuring both sides) should be used to one expansion valve with Freon or methyl chloride.

"Using ammonia, up to 150 square feet of plate may be used on each refrigerant circuit when series connected. Refrigerant may be expanded into top or bottom plate.

Determining Plate Area

"To determine the area of plate needed for fast freezing, the 'rule of thumb' of 7 to 9 pounds of product per day per square foot of plate (one side) is used. Thus, for a 300-locker plant processing 2 pounds of product per locker per day, the total of 600 pounds divided by 9 results in 66 square feet of plate surface, one side. A 22 x 72-inch plate has 11 square feet one side, so six of these would be used. Two expansion valves are recommended, one on each three plates.

"The freezing time of products will vary considerably, depending on size of packages, temperature of plates and other factors. When products are

frozen they are removed from plates and placed in lockers. Lockers vary in size, the present trend being toward a wider and lower type as more convenient for customer. A size largely used is 20 inches wide, 17 inches high, and 30 inches long. The lower two tiers, usually of drawer type, are 20 inches high.

"Evaporative surface for the locker room is supplied by plates over the aisles. Typical plates are 12 inches wide, in various lengths of 6 to 12 feet and are made up in banks of 4 to 6 plates suspended from ceiling over aisles. Refrigerant circuit may be in series or with header in parallel.

Valve, Header Detail

"With series arrangement not more than four 12-foot long plates (96 square feet of surface) may be used on one expansion valve. If the layout requires banks of 5 or 6 of the 12-foot-long plates, headers should be used. Expansion valves must be selected of the correct orifice size for proper operation. For Freon, $\frac{1}{16}$ -inch to $\frac{1}{4}$ -inch opening is satisfactory.

"Banks of plates are usually mounted with top plate edges 6 inches down from ceiling. To insure efficient operation of all plates a spirit level is used on header and plates to check horizontal position. Lower edge of plates must not be below top of lockers to provide easy access to top rows of lockers.

"Inlet header is sweated to lower connections on plates and expansion valve is connected, usually with $\frac{1}{2}$ -inch flare fitting. Outer header, sweated to upper connections on plates has $\frac{1}{2}$ -inch O.D. sweat type fitting and 6-inch riser should be provided before entering return line to maintain good flooding effect in plates. Return lines must be arranged so excess liquid from one bank of plates cannot run back in another line and close the wrong thermostatic valve.

"Paint finish is satisfactory on plates for continuous low temperature work since rust will not occur. When plates are used in chill room at temperatures above 32° F., rust proof finish is then necessary.

Refrigerant Charge

"Heat exchanger, sight glass and oil separator are recommended on all installations. Refrigerant charge for plates may be figured on a basis of .22 lb. of Freon, .15 lb. of methyl, .10 lb. of ammonia per square foot of plate surface, one side. Sufficient extra amount should be allowed for lines and condensing unit. Receiver on condensing unit should be checked for capacity, as some makes have small receivers and may require an auxiliary receiver.

"Only high grade oil of —20° cold test or lower, should be used in the compressor. Crank-case oil level must be checked regularly.

"The condensing unit is probably best controlled by a combination of back pressure switch and thermostat in the locker room operating a solenoid valve supplying overhead plates. By this means locker room temperature is held closely, with the added advantage that if the locker room is at the lowest desired temperature the loading of fast freeze plates will build up back pressure in the condensing unit, allowing it to start. A check valve is used in return from overhead plates so gas will not condense in the plates.

Estimating the Load

"The various details and mechanical procedure outlined must be followed closely to obtain efficient plant operation. Attention is now called to what is probably one of the most important items, that of insulation. It must be of high grade, time tested material, of proper thickness and vapor sealed on all outer walls. Inner walls need not be sealed, the breathing effect obtained assisting in keeping insulation dry.

"To figure a locker plant we may assume an insulated room about 15 x 25 x 9 feet high, inside dimensions. Laying out to scale, it is found 260 lockers can be placed 5 tiers high with two 30-inch aisles. This allows for freezer cabinet 6 feet long in one corner. If insulation 8 inches thick is used, the total outer area is 1,746 square feet. This is multiplied by 100° t.d. (100° to 0°) and .9 K factor (24-hr. basis) to obtain 157,000 B.t.u. insulation loss per 24 hrs. Adding 25% for service load gives 196,000 B.t.u.

"To calculate surface overhead plates needed, a 2 K factor (B.t.u. per hr. per square foot per degree tem-

perature difference) is taken and multiplied by 16° (temperature difference between air and plates). The result of 32 represents B.t.u. removed by each square foot of plate per hour during compressor operation. As 18-hr. operation is standard warm weather practice, 32 x 18 or 576 B.t.u. will be removed by each square foot of plate per 24 hours.

"The total load of 196,000 B.t.u. is now divided by 576 to obtain result of 340 square feet of overhead plate surface needed. Checking available space over aisles, probably the best arrangement is two banks of 4 plates, each 12 x 144 inches, and two banks of 4 plates, each 12 x 108 inches.

Freezer Plate Surface

"Freezer plate surface is estimated by multiplying the daily average locker load of 2 lbs. by the number of lockers (260), or 520 lbs.. This divided by 9 (lb. of product per day per square foot of plate one side) gives 58 square feet. Seven plates 22 x 60 inches in the freezer cabinet should then provide sufficient freezing surface.

"The figure of 12,000 B.t.u. per 100 lbs. of product is taken for the average freezing load, amounting to 62,300 for this example. This is added to 196,000 B.t.u. above for a total of 258,300 B.t.u. for 24 hr. On an 18-hr. basis, the load is 14,300 B.t.u. per hr.

"Compressor should be selected on basis of —19° gas suction temperature with due regard for temperature of available condensing water.

"Plates may be used overhead in chill room as in locker room. Drip pans are necessary since defrosting will occur between condensing unit cycles. Plate surface is figured much the same as above except 2 1/2 K factor may be used due to faster air circulation.

"Allowance for product load is figured on the basis of 3,900 B.t.u. per 100 lb. of product per day. A separate compressor is recommended on chill room as gas temperature of about 25° is required."

Penn Switch Changes

Detroit Location

DETROIT—Penn Electric Switch Co.'s Detroit office, formerly at 2631 Woodward Ave., has been moved to 7 E. Grand, Highland Park Branch, Detroit, Mich., reports E. M. Smith, branch manager.

Humidity's Importance In Air Sterilization Shown

PHILADELPHIA, Pa.—The relative humidity may have more to do with sterilization of air in schools and public places against spread of influenza and respiratory diseases than does the particular disinfecting chemical used, according to a recent issue of Science Service.

The important part humidity plays in air sterilization is included in a report of findings made by Prof. W. F. Wells and Dr. Peter Zappasodi of the University of Pennsylvania School of Medicine here.

Sterilizing air to prevent spread of influenza and similar contagions has been tried by English scientists through use of an aerosol or fine mist of hexylresorcinol dissolved in propylene glycol, a kind of anti-freeze chemical; and by American scientists first using propylene glycol aerosols without hexylresorcinol and later using propylene glycol vapors.

Prof. Wells and Dr. Zappasodi now point out that results of these operations may be due less to germ-killing effects of the disinfectants used than to the drying produced by glycol vapor.

In studying air disinfection Prof. Wells and his associates performed about 80 experiments in design of apparatus, developments of technic, and the like. The magnitude of lethal effects of humidity changes in exposure chambers as evaluated in these experiments had not been suspected, they assert.

Results show that "high humidity neutralized and low humidity masked the disinfecting action of propylene glycol vapor," the scientists explain, adding, "disinfection was most apparent at intermediate humidities."

They found, moreover, that dehumidification with calcium chloride had a killing effect on test bacteria comparable to that of propylene glycol.

Added Lockers Gobbled Up

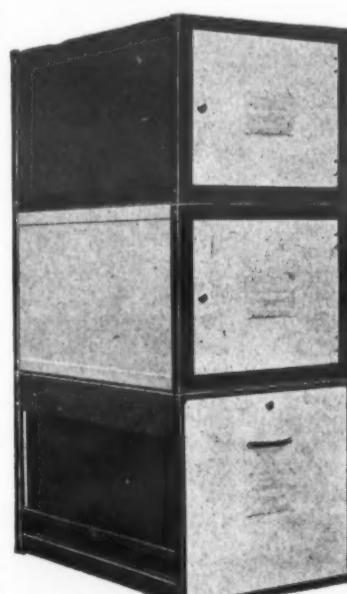
COUNCIL BLUFFS, Iowa—The locker plant at Griswold, operated by Ed Baker, has added 70 new lockers, making a total of 440 when the expansion is completed. All lockers have been rented.

NOW - More Than Ever The Choice of the Industry

New in design and construction, but maintaining the essential features of its predecessor, this new unit conforms in every respect with Government steel reduction requirements.

Food Vault Operators everywhere are taking time by the forelock and utilizing that available expansion space by installing the NEW

MASTER FOOD CONSERVATOR



because it matches their present drawers and door fronts—does not absorb odors—is moisture resistant—clean—sanitary—sturdily constructed—easily stacked. Shipped knockdown and easy to erect.

Do It Now—Expand

Prompt delivery can be made—phone, wire, or write giving your requirements.

Every inch of available refrigerated space must be in use for the duration. Make your waiting list a paying list by ordering your needs now. Illustrated circular upon request.

Endorsed by and sold only through distributors of refrigeration and insulation.

MASTER MANUFACTURING CORP.

121 Main St.

Sioux City, Iowa

Over 300,000 Master Food Conservators in Use

NEW SPECIAL FEATURES PROVIDE BIG, EASY-TO-SELL ADVANTAGES

SALEM LOCKERS
Freeze The Food and Not The Customers

Salem Food Storage Plants provide many benefits to operators and their trade. Most outstanding is the fact that customers never enter the refrigerated chamber.

With the Salem Food Storage System, the refrigerated chamber adjoins the sales room. Customers push a selection button at the refrigerator door, and a tier of lockers automatically comes to them. Thus, when the door is opened, customers have access to their lockers without entering the refrigerated area. Locker patrons are not exposed to cold or obnoxious odors.

Since a rubber flap fits between the lockers and the door jambs, expensive door loss is avoided. In fact, the Salem System has 57% less BTU. loss than the Walk-in types. Many Salem Locker Plants are now operating profitably and with new, low maintenance costs.

SALEM FOOD STORAGE PLANTS ARE NOW AVAILABLE FOR YOU
Under the W.P.B. rulings, we can build plants under certain conditions. We recommend that you write today for prices and up-to-the-minute engineering data.

Write Today

Dealers and engineers will find this system more satisfactory to handle than other types. The equipment has many worth-while advantages and the system is advanced in design. Write today for further data.

SALEM ENGINEERING COMPANY
SALEM, OHIO

'The Place of Cold Storage In National Defense of British Isles'

'Store, Store, Store' Became the Demand of the Government When a Food Crisis Threatened

By Theodore Raymond of the British magazine, "Modern Refrigeration"
(Supplied by British Information Services)

Britain's cold storage industry has, since the outbreak of war, cooperated wholeheartedly with the British Ministry of Food to strengthen cold storage resources throughout the country. This has been a difficult task, for Britain was not before the war cold-storage conscious—at least not in contrast with the United States.

World War I should have taught the necessity of ample cold storage accommodation, but actually it had, by its aftermath, an opposite influence. Up to August, 1914, there was in operation 32,000,000 cubic feet of public cold storage space in Great Britain. It was 1917 before the country woke up to the need of materially increasing this, and by the time World War I ended the total capacity had been brought up to 50,000,000 cubic feet.

The conditions of trading which gradually developed after 1918 were really responsible for Britain not being better prepared than it was in 1939. The meat and produce exporters of the Southern Hemisphere, by their realization of the financial wisdom of rationing and regulating shipments to Britain, actually diminished the amount of cold storage needed below the 32 million cubic feet total, let alone the 50 million cubic feet aggregate to which it had been raised.

The cold storage industry was denied also the benefits of the Derating Act by which factories were given a measure of tax immunity. So public cold storage stores were languishing badly in 1939, and some companies were actually closing down.

Policy of Small Reserves Scrapped

War soon compelled Britain to scrap its food policy of "quantitative regulation of marketing," that is, the importation of regular shipments of food only slightly in excess of consumer demand, thus precluding the building up, to any large extent, of reserves of cold stored produce.

A continuation of that policy would have led the country to the verge of food shortage as sources of supply were knocked off one by one by the Nazi war machine, at a time when Britain's food producers had not got fully into their stride with their "grow-more" efforts and before U. S. Lend-Lease food supplies had begun to arrive here.

It was at that period of emergency that British cold stores had the spotlight thrown upon them and "Store, store, store!" became the demand of the Government. The success of that policy, reflected in the additions to the cold storage capacity of the country today, shows the vigor with which the Ministry of Food has tackled the job.

It was not long before an extensive cold store building program began. The switch-over from chilled

to frozen meat carriage from overseas, the irregular arrivals of food ships, the possibility of sudden diversion of shipping to West Coast ports and the possible loss of refrigerated shipping space due to enemy action were the main factors which spurred on building activity.

Move Away From Ports

A great proportion of Britain's peacetime refrigerated warehouses were positioned at the ports, the centers of meat importation. London, for instance, had about three cubic feet of cold storage space per head of population, yet other thickly populated inland districts had only a decimal point of a cubic foot per head.

It was obvious at the outset of the Government building program that, for reasons of security, new structures would not be located in the port-side danger areas. It had been Lord Woolton's declared policy, right from his appointment as Minister of Food, to move foodstuffs inland as quickly as possible and to zone the storing areas.

Britain's juxtaposition to the Continent of Europe naturally renders the eastern portion more prone to enemy attack; it was, therefore, patent that the sites for the new stores would be chosen in the western half of the country.

First concentrating upon large refrigerated depots of one and a half million cubic feet capacity, the Ministry of Food and the Ministry of Works and Buildings were not slow to realize that these stores might be rather too good as targets for the enemy bomber. After diminishing the "standard" size to half a million cubic feet, the Ministry of Food finally arrived at a quarter of a million cubic feet as the size economically and strategically best suited for Britain's wartime needs. It is this capacity plant that is being duplicated in many parts of the country at the present time.

These new cold stores, together with the other 350 premises forming the peacetime cold larder—for the Government roped in all stores of a capacity of 2,000 cubic feet and over—offer a formidable barrier against any starvation plan that Hitler might have.

Built to Last

The new large capacity stores recently erected are all first-class engineering jobs and appear to be too substantial in construction to warrant being torn down after the war, although the cold store industry has the Government's assurance that when these buildings are no longer wanted in the scheme of national defense they will not be allowed to compete with the commercially-owned premises.

How this will be done has not yet been disclosed.

There is no doubt that these new

refrigerated warehouses embody all the latest ideas in civil and mechanical engineering relating both to the specialized construction and equipment of cold stores in peacetime and to the improvements designed to meet the stringent conditions of wartime storage.

Handle More Produce

In peacetime, the space occupied by a ton of frozen produce is high, owing to the necessity of stowing separately the goods belonging to each customer, sub-divided into marks and numbers. Government ownership of the principal foods automatically reduces considerably the space occupied by each ton of produce. This produces many problems for the refrigerating engineer.

Also, meat may arrive at a store in a "soggy" or partially defrosted condition, after having been delayed in transit for many days. This meat, much of it in boneless compressed form, is then stacked very tightly in the store. This load on the compressors is much greater than experienced in peacetime and the designers of the new premises have provided ample refrigerating power, capable, if needed, of taking produce down to 0° F.

Perhaps the greatest distinguishing feature between the new Government stores and the commercially-owned refrigerated warehouses are the highly-developed transport facilities provided at the former.

Continuous loading and dispatch canopied platforms girdle the entire buildings, giving complete weather protection to the incoming and outgoing perishable goods and allowing night work under black-out conditions.

Motor Makers Hope To Meet Some Problems Of Scarce Materials by Standardization

WASHINGTON, D. C.—Problems arising from scarcity of critical materials and the need for simplification and standardization in the electric motor industry were discussed at recent meetings of the Fractional and Integral Motor Industry Advisory Committees held with WPB.

Carbon steel shafting is at present the most serious bottleneck in the electric motor industry, with copper sleeves second in line.

Standardization in the field of generator sets driven by small internal combustion engines is urgently needed. The Government is having difficulty in getting repair parts due to the great variety of gasoline engines used for generator sets of a given rating. For example, four or five different types of gasoline engine may be supplied with an order for 3,000 generators. The engine parts are not interchangeable and

hence many different kinds of repair parts must be stocked.

The manufacture of small ball bearings used in the fractional horsepower motor industry is in a critical situation, according to a panel report to the Fractional Horsepower Advisory Committee, and recommendations for conserving the bearings were made by the panel. These recommendations have been sent to members of the industry. WPB industrial engineers will visit all plants manufacturing small motors and give first-hand instruction on conservation methods of handling the critically short bearings.

Conservation of other critical materials through substitution and standardization was urged. An effort is being made, it was reported, to standardize flanges and shafts for series-coupled Navy pumps so that one motor will fit a variety of pumps.

New Westinghouse Water Cooled Condenser With Steel Tube and Shell Made In 11 Sizes

EAST PITTSBURGH, Pa.—A new water cooled Freon condenser built in 11 different sizes for varying capacities is announced by Westinghouse Electric and Manufacturing Co.

This type CW condenser gives a range of capacities from 5 to 100 tons each, net refrigeration effect. It is constructed of a seamless steel shell and steel tubes, with removable cast-iron header which can be ar-

ranged for either series or parallel water flow.

All prime surfaces with no fins permits removal and replacements of tubes if necessary. Tubes are rolled into tube sheets and soldered to insure permanent Freon tight joints.

The unit is equipped with a ball type valve for purging noncondensable gases. Condenser has a fusible plug with melting point of 230° F.

How to Profit NOW by Using Our FACTORY SERVICE PLANS for G-E Fractional-horsepower Motors

UNDER these plans, General Electric will exchange or repair any G-E fractional-horsepower motor, regardless of the type or make of appliance to which it is applied, should the motor become inoperative. These Factory Service Plans have proved themselves in regular use. They are not new and untried. They are ready for use in your business now.

Promotes Service Business

These plans attract service business to your store because they provide for the quick replacement or repair of G-E motors, now, when your customers must keep their present appliances operating. They promote customer confidence in your repair shop because of the complete factory rebuilding feature, and the G-E warranty given on the work. Those whom you serve under the plans will speak favorably to others about your service because of the speed with which a repair job can be completed. The plans provide assurance to you and your customers that G-E motor-driven appliances will be kept in operation.

How the Plan Works

For the most generally used types of motors, there is the *Exchange Plan Service*. The inoperative motor is removed from the appliance and replaced immediately. We carry field stocks of "exchange plan" motors

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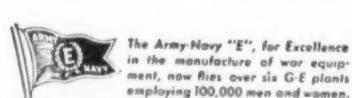
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—British Official Photographs
Modern design and construction methods of the Wartime plants are demonstrated in this photograph of an interior of one of the new plants.



GENERAL  ELECTRIC

Refrigerant-Cooled Spot-Welding Electrodes

By Dr. F. R. Hensel, Metallurgical Consultant, P. R. Mallory & Co., Inc.; E. I. Larsen, Div. Manager, Metallurgical Engineering Dept., P. R. Mallory & Co., Inc.; E. F. Holt, Senior Research Engineer, Metallurgical Engineering Dept., P. R. Mallory. Presented at the annual meeting of American Welding Society.

Introduction

In recent years refrigerant cooling of resistance-welding electrodes has received an increasing amount of attention and considerable experimental work has been carried out in laboratories and in the welding departments of the users of welding machines. More recently a number of commercial refrigeration systems have been placed on the market for the cooling of resistance-welding electrodes.

The amount of published information on the benefits of refrigerant-cooled welding electrodes is very meager. Therefore, the present authors have carried out an experimental program in an attempt to determine some of the fundamentals of refrigerant-cooled welding electrodes. The work reported is, in a sense, a continuation of their paper entitled, "Thermal Gradients in Spot-Welding Electrodes."

Scope of the Investigation

Since this work was carried out in connection with projects of the Aircraft Resistance Welding Committee, the experiments were confined to the spot welding of aluminum alloys. Furthermore, it appeared that refrigerant cooling would show real advantages in the welding of aluminum and its alloys because of the difficulties that have been experienced with metal pick-up by the electrodes. Comparatively high-current densities are used in the welding of aluminum and the increased electrical and thermal conductivities due to refrigerant cooling seem to be advantageous.

The authors realize, however, that the field may be considerably broader, as evidenced by the data recently published on the use of refrigerant

cooled electrodes for welding of armor plate and ferrous materials.

Effect of Decreasing Temperatures Upon the Electrical Properties of Electrode Materials

Before proceeding with actual welding tests, it was deemed advisable to determine the electrical conductivity of copper and hard copper alloys, commonly used for aluminum welding, as a function of decreasing temperatures.

The specific resistivity and the electrical conductivity are given in Table 1 and are shown graphically in Fig. 1. It is evident that there is a substantial increase in electrical conductivity as the temperature is lowered. Of special interest are the values for 0°C, because in some instances, refrigerant cooling has been utilized within the range permissible with artificially cooled water. The electrical conductivity at 0°C for copper, Elkaloy A and Mallory 3 is as follows:

Copper ... 110.52% of I.A.C.S.
Elkaloy A .103.5% of I.A.C.S.
Mallory 3 ... 93.7% of I.A.C.S.

Table 1—Electrical Properties of Copper and Copper Alloys at Low Temperatures

Temp., °C.	Copper	Specific Resistivity, Microhms/Cm. ²	Elkaloy A	Mallory 3	Electrical Conductivity, % of I.A.C.S.	Copper	Elkaloy A	Mallory 3
24	1.768	1.860	2.048	99.2	93.6	85.2		
13	1.685	1.792	1.972	104.7	98.4	89.4		
11	1.67	1.781	1.954	105.6	99.2	90.2		
0	1.597	1.706	1.883	110.5	103.5	93.7		
-7	1.544	1.657	1.832	114.3	106.5	96.3		
-10	1.528	1.634	1.812	115.5	108.0	97.3		
-15	1.486	1.598	1.774	118.8	110.5	99.3		
-20	1.468	1.571	1.752	120.9	112.3	100.6		
-25	1.428	1.537	1.714	123.8	115.1	102.8		
-30	1.401	1.508	1.684	126.4	117.4	105.1		
-33	1.389	1.481	1.657	128.8	119.2	106.4		
-40	1.292	1.401	1.587	136.2	125.3	110.7		
-46	1.262	1.374	1.552	139.2	127.8	113.2		

Fig. 1—Electrical Conductivity of Mallory 3, Elkaloy A, and Copper at Low Temperatures

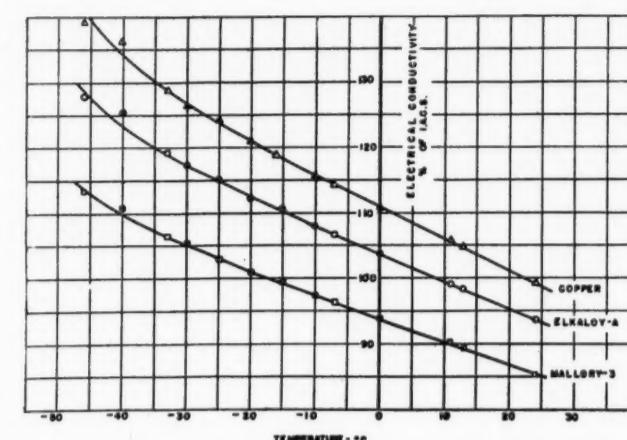


Fig. 2—Electrical Conductivity of Copper As a Function of Temperature

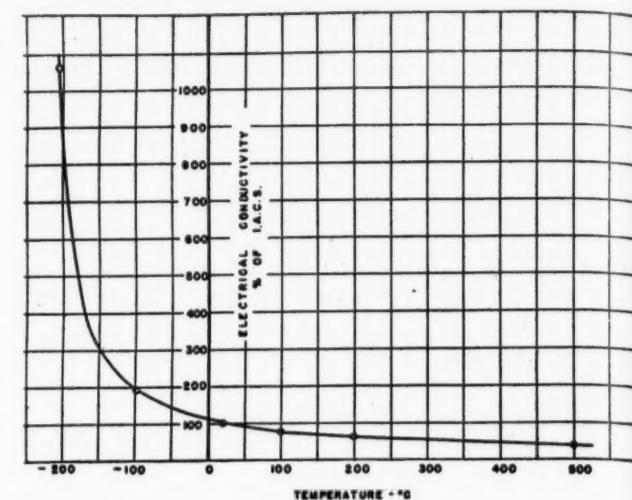


Table 1(A)—Tensile Test Of Copper Wire 5Mm. Diam.

Temp., °C.	Ultimate Tensile Strength, Psi.	% Elongation
25	34,100	37
-60	36,950	32
-120	40,500	30
-180	45,900	31
Tensile Strip, 3 Mm. Thick		
Temp., °C.	Ultimate Tensile Strength, Psi.	% Elongation
16	31,901	35
-60	35,530	37
-80	37,650	37
-100
-120	39,800	37
-180	45,500	36
-200

for practical purposes, as may be seen in Table 2.

There is considerable discrepancy in the literature regarding values for the thermal conductivity of copper, but it is quite evident that there is a very steep rise at temperatures near -250°C.

Effect of Decreasing Temperatures Upon the Mechanical Properties Of Copper

The information collected from published literature discloses increases in mechanical strength properties with decreasing temperatures. One investigator reports tensile tests on annealed copper strip and wire. The data in Table 1 (A) is from M. Kuroda (Scientific Paper No. 393, Inst. Phys. Chem. Research Tokyo), 19, 163 (1932).

Preliminary Experiments

The investigations related in this paper were conducted primarily to collect theoretical data on temperature distributions in resistance-welding electrodes. Comparative thermal conditions existing during spot weld-

Table 2—Thermal Conductivity of Copper at Low Temperatures

Temp., °C.	Thermal Conductivity, Cal./Gm./Cm. ² /Sec., °C.
100	0.90
50	0.920
20	0.923
0	0.980
-73.7	1.05
-190	1.42
-200	1.95
-250	21.0

(Continued on Page 17, Column 1)

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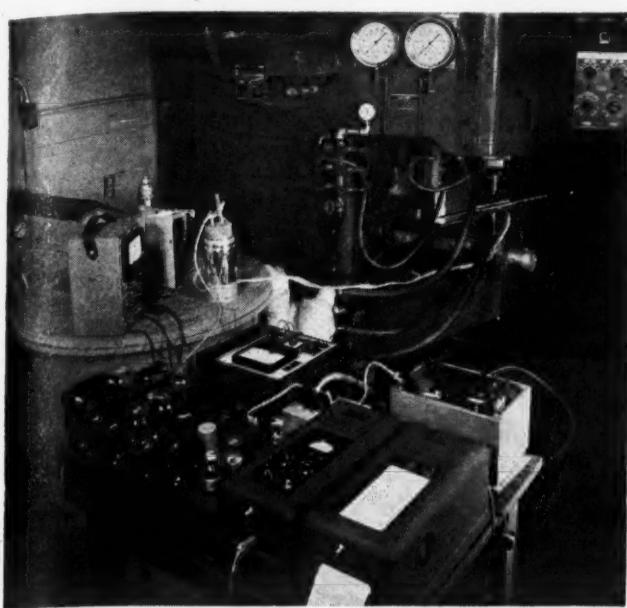
Fig. 3

Fig. 3 (above) a view of the general test layout.

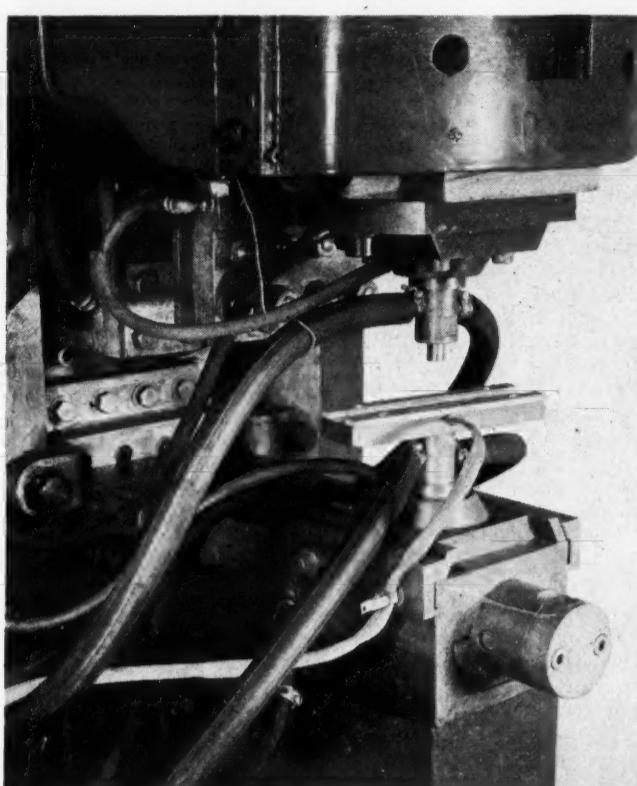
Fig. 6

Fig. 6 (right) general arrangement of holders and electrode assembly employed in the final tests.

Effect of Cooling on Weld Strength

(Continued from Page 16, Column 5) particularly on the steel parts, will cause a rapid corrosion.

Water was circulated through the welding transformer, arms and main body of the electrode holder, keeping these parts at a temperature of approximately plus 25° C.

Some of the preliminary welding tests were carried out on 17 ST aluminum alloy, 0.040 in. thick. The welding surface was prepared by mechanical cleaning, such as steel wool with a powder abrasive.

The electrode design used in all of the welding experiments is shown in Fig. 5, and the position of the thermo couple in the electrode nose is indicated.

Elkaloy A metal was used as the electrode material. In order to avoid frosting of the electrode tips when operating at subzero temperatures, a thin coating of glycerine was applied to the tip faces.

Effect of Refrigerant Cooling On Tensile Properties

To determine the effect of electrode temperature on the strength of welds made under identical welding conditions, a series of single-spot specimens were prepared to test shear strength in tension. The first set was welded using water-cooled electrodes, the temperature of which was plus 13° C. before welding. The second set was welded using refrigerant-cooled electrodes, the temperature of which was -30° C. before welding. The welding conditions were as follows:

Delay time 8 cycles
Weld time 8 cycles
Hold time 16 cycles
Electrode force 600 lb.

Secondary current

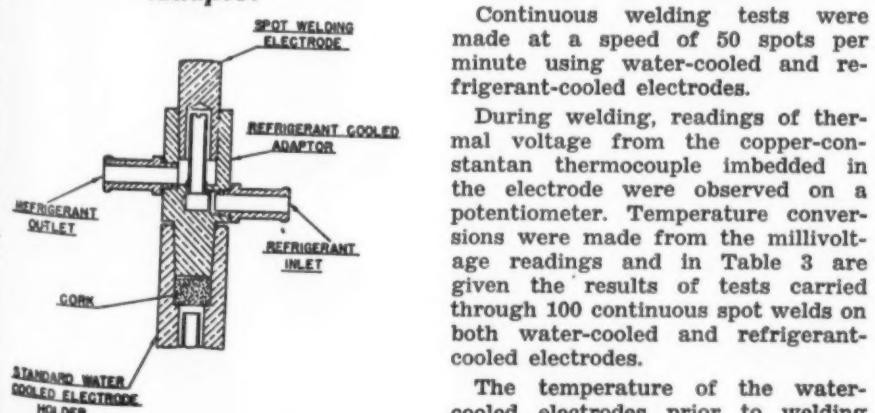
22,500 amp. r.m.s.

Heat control 100%

Tensile tests on the two sets of specimens disclosed no appreciable difference in the weld strength. The following shear strengths were obtained:

Sample No.	Tensile Strength in Shear, Lb./Spot Refrigerant-Cooled Electrodes	Water-Cooled Electrodes
1	450	464
2	467	493
3	479	480
4	466	496
5	487	453

Fig. 4—Special Electrode Adaptor



During welding, readings of thermal voltage from the copper-constantan thermocouple imbedded in the electrode were observed on a potentiometer. Temperature conversions were made from the millivoltage readings and in Table 3 are given the results of tests carried through 100 continuous spot welds on both water-cooled and refrigerant-cooled electrodes.

The temperature of the water-cooled electrodes prior to welding

General Observations from Preliminary Tests

(a) In using the calcium chloride brine at such low temperatures as -40° C., there was a strong tendency for the solution to precipitate calcium chloride. This was troublesome when it occurred in the holders or on the holder tapers. Partial evaporation of the water from the brine on the tapers created a very objectionable deposit of salt.

In one instance when the holders were not carefully washed following a brine cooling test, it was found that with the insertion of new electrodes the secondary current output of the welder was reduced by about 18%.

Careful inspection disclosed that the reduction in output was caused by the presence of deposited salt on the tapers of the refrigerant-cooled adaptor.

(b) When welding was attempted with a heavy coating of frost on the electrodes, holes would be blown into the sheets to be welded. This phenomenon may be due to arcing, and an instantaneous formation of steam surrounding this overheated zone. The formation of ice probably prevents the normal penetration of the radius face of the electrode into the metal being welded, causing the current to flow through a very restricted area.

(c) In the initial tests continuous welding was carried out on aluminum alloy sheets about 10 x 12 inches, the welding progressing up one row and down another, the guiding of the sheet being done manually.

It was impossible to obtain symmetrical welds and the surface appearance of the spot was generally

Table 3

No. of Spot Welds	Refrigerant-Cooled Electrodes, Temp., °C.	Water-Cooled Electrodes, Temp., °C.
0	-28	13
10	47	133
20	54	144
30	54	146
40	56	148
50	56	146
60	56	146
70	56	148
80	59.5	148
90	59.5	148
100	59.5	148

distorted, depending on the alignment with which the sheet was held.

In order to produce welds of consistent symmetry and uniform indentations, a simple fixture was attached to the lower welding electrode which accommodated strips one inch wide. This fixture maintained the position of the weld in the center of the strip and held the flat surface of the strip in a plane normal to the axis of the electrodes. The strips used in the continuous welding tests were 24 inches long. The fixture may be observed in Fig. 6.

From the data collected on experiments carried out on the 100-kva. welder, it was impossible to draw any definite conclusions as to the relative rate of electrode deterioration that might be encountered between refrigerant- and water-cooled electrodes.

Discrepancies in rate and nature of electrode deterioration were wide and varied, and although there seemed to be a tendency to improvement in electrode life with refrigerant cooling, it was believed that the skidding and movement of the electrodes

(Concluded on Page 18, Column 1)

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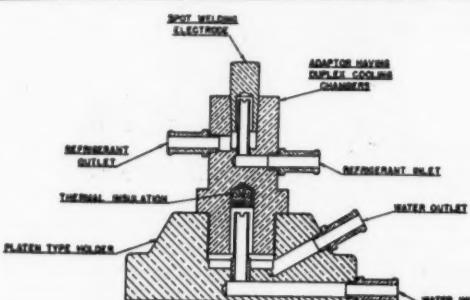
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Fig. 7

Fig. 7 (right) shows the Platen Type Holder and Special Electrode Adaptor used in final tests.



Final Tests on a Larger Welder

(Continued from Page 17, Column 5) rodes on the work under pressure during welding tended to obscure the true significance of the test results.

Final Tests

In view of the unsatisfactory conditions on the 100-kva. welder, it was decided to make further and more detailed tests on the 150-kva. press-type welder. On the larger welder it was possible to maintain conditions more nearly approaching those ideally suited for aluminum welding. Higher pressures and currents could be applied over a greater range and skidding of the electrodes could be reduced to a negligible minimum. A photograph, Fig. 3, is a view of the general test layout.

Holder and Holder Assembly

The general arrangement of the holders and electrode assembly employed in the final tests is shown in Fig. 6, and a sectional view of the

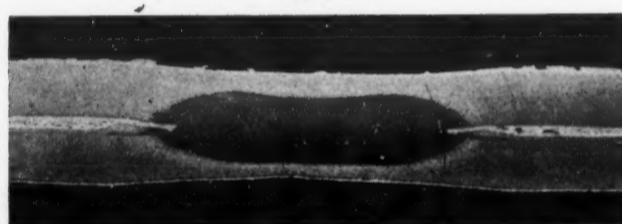
platent-type holder and adaptor is disclosed in Fig. 7. The holder incorporates the same essential features as the adaptor and holder described previously, including individual cooling chambers for water and refrigerant.

Both the platen holder and adaptor were made as short as practical in order to maintain a minimum spacing of the welder arms. This was done to reduce the area of the secondary loop and thereby obtain maximum output from the welder.

Temperature Recording Device

Electrode temperature was measured by means of a copper-constantan thermocouple, the wire size of which was 0.101 inches. The thermocouple bead was inserted in a 3/64 inch diameter hole drilled normal to the axis of the tip 0.056 inches from the welding face. The bead of the thermocouple was directly below the center of the welding face. The emf. generated by the thermocouple was electronically amplified so as to cause a deflection on a Brush, crystal type, oscillograph recorder. The general set-up for measuring the temperature by this means was described in a previous paper by the authors.

Fig. 8



It was necessary to incorporate considerable refinements in this amplifier circuit to make it suitable for measuring small temperature differences and to add provisions for recording emf. of the thermocouple at temperatures below zero as well as temperatures above zero, since the polarity of the thermocouple changes at 0°C. A detailed description as well as circuit diagrams and photographs of the temperature recording equipment is given in Appendix B.

Of extreme importance was the insulation of the thermocouple bead to prevent impressing a voltage to ground on the amplifier input circuit during the passage of the welding current. A number of materials were tried as insulators and a ceramic having a melting point of approximately 500-600°C. proved to be satisfactory. A very thin film of this ceramic was melted on the thermocouple bead. With an insulated thermocouple of this type, the thermal lag was negligible.

Test Materials and Surface Preparation

Material Welded and Preparation

The material welded during the final tests was 24 ST Alclad aluminum alloy and the material thickness was 0.040 inches.

Immediately prior to any particular welding test the surfaces of the sheet were degreased in carbon tetrachloride and subjected to a mechanical cleaning. The mechanical cleaning was accomplished by wire brushing the sheet surfaces using a 6-inch diameter wire brush having a 0.003-inch diameter steel bristles and rotating at a speed of 3,400 r.p.m.

Following cleaning, the material was welded within a period of not longer than 20 minutes, and in most instances, within 10 minutes.

Electrode Material and Preparation

The electrode design was similar to that used in previous tests shown in Fig. 5. This electrode design was used in the tests because it was a standard adopted by the Aircraft Resistance Welding Standards Committee.

The electrode face was machined to a 2-inch spherical radius and prior to welding tests the electrode face was finished using a paddle-type

electrode cleaner. This cleaner was faced on both sides with No. 320 Aloxite abrasive cloth and the abrasive cloth was backed up with approximately 0.098-inch thickness of sheet rubber. To polish an electrode, the paddle cleaner was rotated several times back and forth, while the electrodes were bearing against each side.

Welding Conditions

Welding conditions used in pre-
(Continued on Page 19, Column 1)

Table 4

(A) Welding speed	50 strokes per min.
(B) Welder Sequence	
Delay time	8 cycles
Weld time	8 cycles
Squeeze time	15 cycles
(C) Electrode force	1,000 lb.
(D) Welding current	Approx. 28,000 r.m.s. amp.
(E) Electrode material	Ekaloy A
Electrode hardness	73 Rockwell B.
Electrode electrical conductivity	87% of I.A.C.S.
(F) Welding spacing	1/4 between center lines

Fig. 9

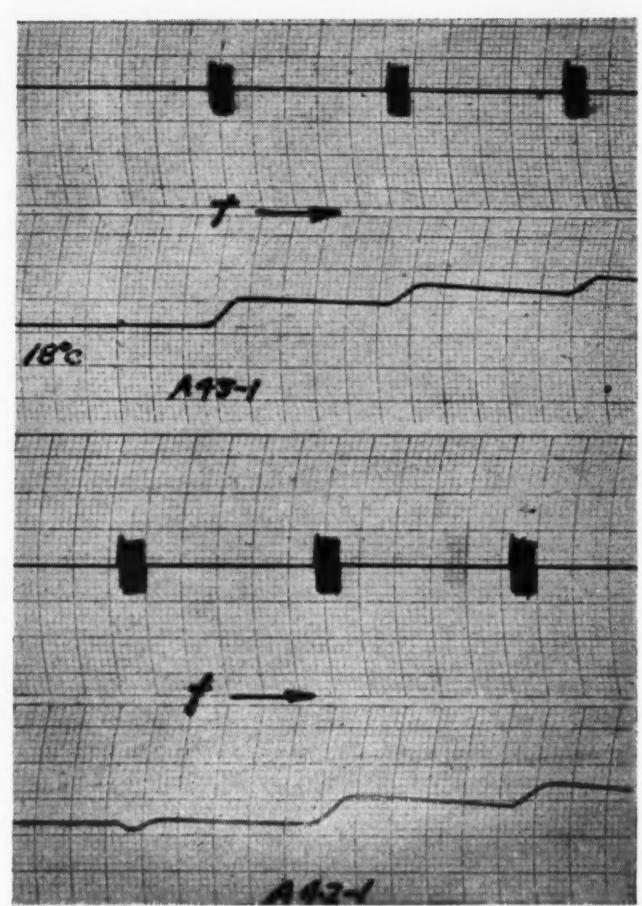


Fig. 10



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Fig. 11—Average from Tests A43-2 and A43-1 Water-Cooled Electrodes

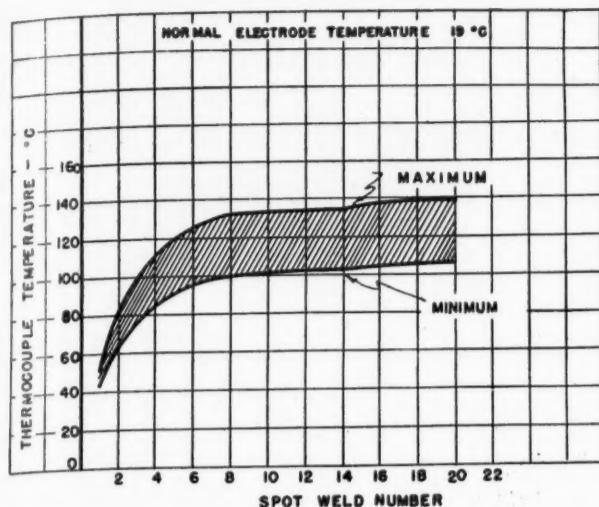
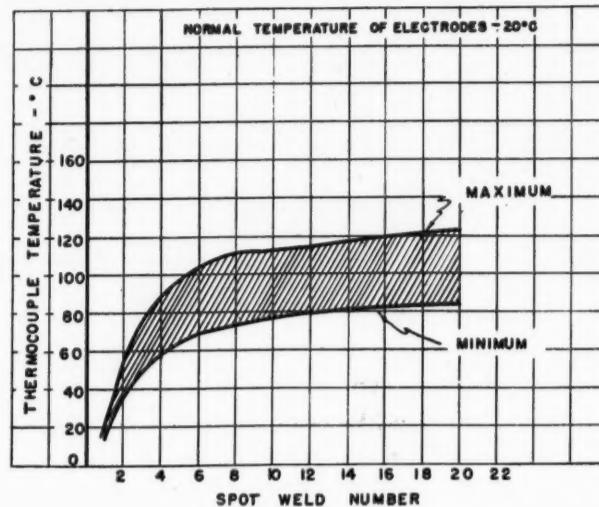


Fig. 12—Average from Tests A42-1 and A42-2 Refrigerant-Cooled Electrodes



Comparison Between Water Cooling and Refrigerant Cooling

(Continued from Page 18, Column 4) previous tests were not applicable for welding 24 ST Alclad due to the occurrence of cracks in the spot welds. A new set of welding conditions was established to produce structurally sound welds in the Alclad alloy. The welding conditions standardized on are itemized in Table 4.

The shear strength in tension of single-spot specimens obtained with these conditions ranged from 740 to 851 lb. per spot. The dimensions of the spot weld may be observed in Fig. 8 which is a macrograph at 7.5 diameters. These welds were free of cracks as disclosed by microscopical and X-ray examination.

Temperature Measurements On Welding Electrodes

The temperature increase during continuous welding at 50 spots per minute was recorded for a run of 20

welds, using water-cooled electrodes. An oscillogram on one of these test runs is shown in Fig. 9. On this oscillogram both the primary welding current and the emf. of the temperature measuring device are recorded. It is evident from this oscillogram that at this welding speed the temperature of the welding electrode rises rather rapidly for the first five or six welds, reaching a quasi-equilibrium state after about 10 welds. It should further be noted that the temperature increases steeply during the time the welding current is flowing, and afterward drops slightly until the welding current comes on for the next weld. The temperature recorder is sensitive enough to measure these comparatively slight changes in temperature.

In the water-cooling run the water temperature was plus 18° C. and the water flow rate through the electrodes was 1.70 gallons per minute per tip.

The results of two series of tests are tabulated for water-cooled electrodes in Table 5. The tests were repeated, using refrigerant cooling of the electrodes. The rate of flow of refrigerant through the electrodes was 1.85 gallons per minute per tip. The temperature of the refrigerant-cooled electrodes at the start of the welding was -20° C. The temperature rise of the electrodes for 20 consecutive spots is listed in Table 6. The oscillogram is shown in Fig. 10.

The results of the temperature tests on water-cooled electrodes are plotted graphically in Fig. 11, while Fig. 12 indicates the trend of the temperature rise using refrigerant-cooled electrodes. In switching from refrigerant to water cooling, the refrigerant hose was disconnected from the electrode adaptor and replaced with the water hose. No changes were made in the platen spacing.

By comparing the temperature conditions obtained with water cooling and refrigerant cooling, respectively, at the rate of welding investigated, several points are of importance.

1. The maximum electrode temperature attained with refrigerant cooling is somewhat lower than the temperature attained with water cooling.

2. The maximum temperature obtained with refrigerant cooling at a welding speed of 50 spots per minute is approximately 123° C. Since the original brine solution had a temperature of -36° C. the temperature differential is approximately 159° C.

The efficiency of the refrigerant cooling at this speed does not seem to be too impressive. It was observed, however, that the time required (recovery time) for the temperature to drop from that attained during welding, back to the normal temperature of the brine, was shorter in the refrigerant cooling than with water cooling. The recovery times were measured directly on the oscillograms and while it took approximately 16 to 19 seconds for the water-cooled welding electrodes to return to a water temperature of 20° C., it took only five to six seconds for the refrigerant-cooled electrodes to cool to 0° C. after having reached a maximum temperature of 123° C.

(To Be Continued)

(The second part of this study on Refrigerant-Cooled Spot-Welding Electrodes, which AIR CONDITIONING & REFRIGERATION NEWS is publishing with the permission of the American Welding Society, is scheduled for publication in the Feb. 1 issue of the News.)

Violator of P-100 and M-9-a Suspended

LOS ANGELES, Calif.—For "wilful violations" of General Preference Order M-9-a and Preference Rating Order P-100, National Wholesale

Electric Co. here is denied priority and preference ratings in deliveries of material and is excluded from allocation of scarce materials for a three-months' period beginning Jan. 2 and ending April 2, by terms of War Production Board's Order S-191.

The penalty applies to B. R. Vancott, partners in the company engaged in distributing electrical supplies, as well as to the business organization itself.

Violation of the M-9-a order consisted of selling and delivering substantial quantities of copper wire and other wire or brass mill products on orders bearing no preference rating from Feb. 9 to Sept. 21, 1942, and making similar sales and deliveries on orders bearing ratings lower than A-1-k during the May 9-Sept. 14 period in 1942.

In addition, from Jan. 19 to June 17, 1942, National Wholesale applied preference ratings of A-10 under Preference rating Order P-100 to purchase orders for various materials, falsely certifying that these materials were for maintenance, repair, or operating supplies.

Materials which cannot be allocated to the company during the suspension period are those of which supply or distribution is governed by any order of the Director of Industry Operations or the Director General for Operations.

Sacramento Locker Plant

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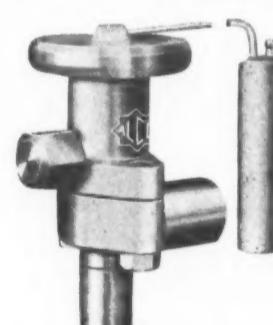


Proper Installation Assures Even Longer Life for Every ALCO THERMO VALVE

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3. Do not install the remote bulb so as to expose it to a downstream of air. In such locations it does not accurately reflect the temperature in the suction gas leaving the evaporator.

4. Be careful to install the correct size of Thermo Valve. Oversize valves result in costly wear on valve pin and seat.

These service tips from Alco are published in the interest of refrigeration conservation and maintenance. Until such a time as replacements are again easily available for ordinary civilian uses, it is essential that every effort be made to keep existing equipment operating in the most efficient manner possible.

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MANUFACTURING COMPANY
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CHECK THE FEATURES
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1-3 h.p. to 120 Tons
American Injector Company
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SAINT LOUIS, MISSOURI

Table 6—Temperatures During Continuous Welding Refrigerated Electrodes

Spot Weld No.	Thermocouple Temp., °C.		Thermocouple Temp., °C.	
	Test A42-1 Max.	Test A42-1 Min.	Test A42-2 Max.	Test A42-2 Min.
0	-20	-20	-20	-20
1	16	12	24	14
2	48	34	56	36
3	70	50	80	52
4	84	58	93	59
5	93	63	101	63
6	101	68	106	67
7	106	72	111	70
8	108	74	112	72
9	111	75	114	75
10	111	77	116	75
11	111	77	118	77
12	112	78	118	79
13	112	78	118	79
14	115	80	119	80
15	118	80	119	80
16	118	80	121	80
17	120	80	121	82
18	121	84	122	83
19	122	84	123	84
20	122	84	124	84

NOTE: Test A42-1—5.8 sec. required to return to 0° C. after twentieth weld.
Test A42-2—5.3 sec. required to return to 0° C. after twentieth weld.



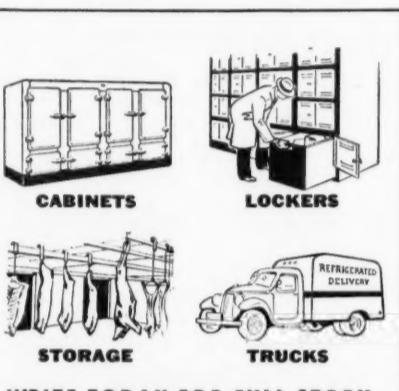
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WHEN food for our armed services and allies had to be refrigerated for shipment overseas, it was a Zerocel product that was chosen to insulate the ships!

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Zerocel is doing the same sort of job for manufacturers of domestic and commercial refrigeration, in everything from complete cold storage buildings to the small reach-in. It is fireproof, odorless, water-repellent, and immune to

fungi and vermin . . . and it costs $\frac{1}{2}$ less! Write for free Bulletin 1477-A.



WRITE TODAY FOR FULL STORY on efficient, low-cost Zerocel. Our staff of insulation engineers will be glad to make recommendations on specific problems. Address Industrial Sales Division, National Gypsum Company, Buffalo, New York.

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FOR REFRIGERATION AND WAR WORK



NIBCO WROT FITTINGS RETURN BENDS AND TUBULAR PARTS

BEFORE you order a special part look in our Catalog No. 613 showing NIBCO Wrot Fittings for Air Conditioning and Refrigeration. Nine chances out of ten you'll find what you need in our standard line . . . tees, els, couplings, reducers, adapters, crosses, return bends, hangers . . . more than 1000 items and sizes are listed. Write for your copy if you do not have one. NIBCO also manufactures a vast number of amazingly interesting fabricated tubular and non-ferrous cast parts. Tell us your problem . . . we'll give you the answer.



Servicing the G-E Scotch Yoke Refrigerator Machine

From the General Electric Service Dept. Educational Film of the Same Name
(INSTALMENT 9: DISCHARGE VALVE LEAKS AND STUCK FLOAT VALVES)

Editor's Note: The editorial material on these pages is a published version of "Servicing Scotch Yoke Machines," originally presented as a sound slide film produced by the Product Service Division of General Electric's Appliance and Merchandise Department. The material is appearing in instalment form in Air Conditioning & Refrigeration News, by permission of the General Electric Co.

Previous instalments are:

Instalment 1 (Sept. 28)—Principles of Machine Operation.
Instalment 2 (Oct. 12)—Operation of the Temperature Control.
Instalment 3 (Oct. 26)—Finding Out Why Sealed Unit Will Not Run.
Instalment 4 (Nov. 9)—Checking Temperature Control and Starting Relay.
Instalment 5 (Nov. 23) Checking Capacitor and Wiring to Find Trouble.
Instalment 6 (Dec. 7)—"Will Not Run" and "Trips Off on Overload" Complaints.
Instalment 7 (Dec. 21)—Correcting Complaint of "Unsatisfactory Refrigeration."
Instalment 8 (Jan. 4)—Correcting Control Problems and Checking Other Symptoms.

Discharge valve leaks and Stuck float valves

112

(112) Discharge valve leaks and stuck float valves are the only ones of these difficulties that can be fixed by external adjustments.

113

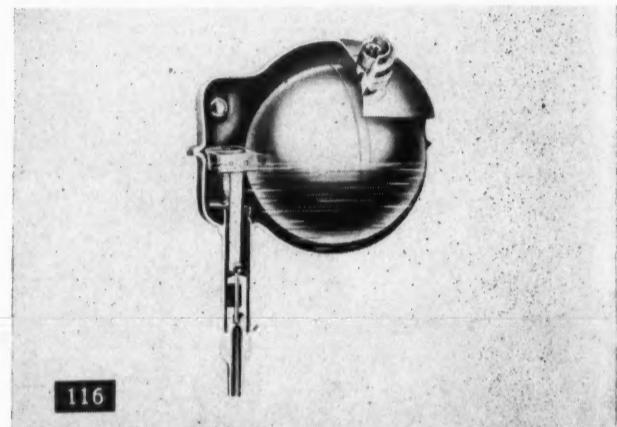
(113) Discharge valve leaks are sometimes due to a tiny particle lodged under the valve. If heat is applied to the evaporator with the machine shut off, the pressure built up may clear the valve when the machine is started.

114

(114) This should be done by using a Monitor Test heater or some similar type.

115

(115) Do not allow the heater coils to touch the surface, and be sure the evaporator becomes no hotter than your hand can bear. A heat application can also correct a restricted evaporator because the resulting high pressure tends to flush it out.



(116) A stuck float valve usually works perfectly, once it is broken loose, but repeated failures of course necessitate replacing the machine.



(117) Sometimes, tapping or jarring the float may release it. But don't tap it too hard.



(118) A more effective method is to use a float valve lifter. This device magnetically lifts the float ball and frequently corrects the difficulty.



(119) And don't forget customer education in dealing with low refrigeration complaints. Many times the fault is not entirely with the machine. For instance, restricted condenser ventilation limits the capacity of the machine. Excessive loads and door openings in warm rooms may also interfere with efficient operation.

Servel, Inc. Awarded Army-Navy 'E'

Refrigeration Servicemen Ruled 'Essential' by Selective Service

EVANSVILLE, Ind. — Ceremonies marking the presentation of the Army-Navy "E" award for outstanding production of war materials to Servel, Inc. were scheduled for Jan. 15 at the Servel plant here.

Servel makes a variety of equipment for the war effort, in addition to carrying on production of some refrigeration equipment for war uses and essential civilian consumption.

Procedure Outlined For Extra Salesmen's Gas

(Concluded from Page 1, Column 1) eligible sales activity for the last three months, or he must be taking the place of a salesman who was so engaged. He must also meet the OPA requirements on ride-sharing and lack of alternative means of transportation.

Eligible salesmen include:

1. Those primarily engaged in selling necessary materials or necessary equipment for the operation of naval, military or hospital establishments or facilities, common carriers; public utilities, industrial, extractive or agricultural establishments essential to the war effort, or any other of the establishments or facilities listed as essential in the gasoline rationing regulations.

2. Those principally engaged in selling those foods, building materials, clothing, fuels, and medical supplies which are essential to public health, and safety, except those selling direct to consumers for personal family or household use.

The allowed mileage, which in no event can exceed 717 miles a month based on 15 miles to the gallon—will be issued as a "C" ration.

The eastern gasoline shortage area, which is exempt "until the Office of Price Administration finds that the available gasoline supply in such area justifies extension of the provisions" for salesmen to that area, embraces 16 states, District of Columbia, and Sullivan County, Tenn.

(Concluded from Page 1, Column 1) tor repairman," "gas appliance servicer," "maintenance mechanic (all around)," "oil burner installation and serviceman," and "radio repairman."

The announcement from the War Manpower Commission further stated that "while the occupational bulletins list essential occupations in the specified activities, such bulletins serve only as a guide to local boards and not as orders for 'blanket deferment' of men engaged in them, as the Selective Training and Service Act strictly prohibits blanket deferments. Furthermore, local boards must determine that an individual registrant is a necessary man in a particular occupation before granting him an occupational classification.

Text of Bulletin 42

Text of Occupational Bulletin No. 42 is as follows:

SUBJECT: REPAIR AND HAND TRADE SERVICES

1. The War Manpower Commission has certified that repair and hand trade services is an activity essential to the support of the war effort.

2. This bulletin covers the following essential activities which are considered as included within the list attached to Local Board Release No. 115, as amended:

(a) Repair and hand trade services: Repair of vehicles, such as bicycles, motorcycles, automobiles, buses, trucks; tires; typewriters and business machines; elevators; radios; refrigerators, clocks, harness, tools, stoves, pneumatic tube system, power laundry equipment, electric appliances and motors, engines, heating equipment, scientific, commercial and industrial weighing machines, farm equipment, and of other industrial and scientific equipment; blacksmithing; armature rewinding; locksmithing. Repair of roofing, electric, gas, and plumbing installations in domestic, commercial, and industrial buildings.

3. The following list of occupations in repair and hand made services are occupations requiring a reasonable degree of training, qualification, or skill to perform the duties involved. It is the purpose of this list to set forth the important occupations in repair and hand trade services which must be filled by persons capable of performing the duties involved in order that the activity may be efficiently maintained. This list is confined to those occupations which require six months or more of training and preparation.

4. Under this bulletin consideration should be given only to those persons trained, qualified, or skilled to render all around repair services, and then only to the extent and to the number of such persons required to meet the minimum essential needs of the community.

5. In classifying registrants employed in these activities, consideration should be given to the following:

(a) The training, qualification, or skill required for the proper discharge of the duties involved in his occupation;

(b) the training, qualification, or skill of the registrant to engage in his occupation; and

(c) the availability of persons with his qualifications or skill, or who can be trained to his qualification, to replace the registrant and the time in which such replacement can be made.

CRITICAL OCCUPATIONS REPAIR AND HAND TRADE SERVICES

Persons in the following occupations, trained, qualified, or skilled to render all around repair services on types of equipment specified in this bulletin should be considered for occupational classification only to the extent and in such numbers as may be required to meet the minimum essential needs of the community.

Automotive Body Repairman
Blacksmith (all around)
Electric Appliance Serviceman
Electric Motor Repairman
Electrician (all around)
Electrician, Automotive
Elevator Repairman
Foreman

(This title covers foremen who are engaged in supervisory duties in connection with repair services as described above for this activity group. It includes individuals who exercise independent judgment and assume extensive responsibility for repair services. It does not include foremen of common labor.)

Furnace Installer and Repairman
Gas Appliance Serviceman
Harness Man
Locksmith
Machinist (all around)
Maintenance Mechanic (all around)
Mechanic, Automotive
Mechanic, Motorcycle
Mechanic, Farm Equipment
Office of Business Machines Serviceman
Oil-Burner Installation and Serviceman
Plumber
Radio Repairman
Refrigerator Repairman
Roofers
Scale Repairman
Sheet-Metal Worker (all around)
Tabulating Machine Serviceman
Time Recording Equipment Serviceman
Tire Retread Moldman
Tire Section Repairman
Tool Maker
Upholsterer
Watchmaker or Clockmaker

(This title includes workers who devote their full time to servicing or repairing all types of watches, clocks, and time recording instruments. It does not include individuals who perform only certain limited phases of watchmaking or who make and repair articles of jewelry.)

Welder (all around).

Salvage Division of WPB Is Established To Carry On Public, Industrial Programs

WASHINGTON, D. C.—War Production Board Chairman Donald M. Nelson announced Jan. 11 the formation of a Salvage Division, headed by Paul C. Cabot as director.

Creation of a Salvage Division follows the resignation of Lessing J. Rosenwald as Director of the Conservation Division of which Salvage formerly was a branch. Mr. Cabot was Deputy Director of the Conservation Division in charge of all salvage operations. The new division will be in the Resources Agencies group under the Director General for Operations.

"Setting up Salvage as a separate Division of the WPB is a recognition of the importance this work has played and must continue to play in the war effort," Mr. Nelson stated.

"When government salvage operations were first started about a year ago as a branch of the Conservation Division the nation faced a critical situation in shortages of iron and steel, fats and greases, waste paper and other salvage items. At that time 45 steel furnaces were down because of lack of iron and steel scrap. The job of stimulating and intensifying public interest in the collection of iron and steel scrap to start these furnaces operating again fell to the Salvage Branch which was greatly aided in its efforts by many groups and civic organizations throughout the country."

Today all these furnaces are back again in full operation and none have

been shut down because of any lack of iron and steel scrap since last summer. The recent salvage drive conducted by the American News-Publishers Assn. Salvage Committee has been declared outstandingly helpful to the thousands of volunteer salvage committees in improving the current iron and steel scrap situation.

Collection programs for other vital salvage items such as, copper, silk stockings, tin cans, farm scrap, heavy scrap and rubber have been conducted through the year by the Salvage Branch of the Conservation Division.

"Although current inventories of iron and steel scrap are much improved over a year ago and other salvage conditions are in better shape, it is extremely important to realize that scrap needs in the future will be greater than ever," Mr. Cabot stated today.

"Many situations which were well answered a year ago may again become acute," Mr. Cabot said. "Copper needs, for example, have grown enormously over the past 12 months and may require us to go after copper, brass and bronze items, non-essential, but in use today, in the near future to augment the scrap supply that has actively been sought throughout the year. Also, our need for heavy iron and steel scrap such as we get from farms, industry and special projects will be a continuing operation we can never slacken."



"... Back in those days Americans thought the 'four freedoms' were worth fighting and working for. 167 years didn't change America's thinking any, either! I know all of us Brunner workers are mighty glad we're part of that army of workers that is backing up our army of fighters."

And there are no two ways about it... commercial refrigeration has an important job to do today. Food of every description is now at a premium, and waste through spoilage must be avoided at any cost.

The long years of service that Brunner refrigeration equipment has given to the Industry have made the name of "Brunner" a symbol of

quality... dependable quality! That reputation has been made possible through the tireless, willing efforts of all the Brunner craftsmen who have always taken a fierce pride in their ability to do their jobs in the only manner they could see possible... to do their jobs the very best they knew how. And they do know how! Brunner Manufacturing Company, Utica, U. S. A.



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From 1 1/2 to 2 times as much as other Drying Agents

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REMOVES ACIDS—Prevents corrosion and formation of sludge

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SILICA GEL
THE TIME-PROVED DRYING AGENT

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Industrial Chemicals Department

BALTIMORE • MARYLAND

BUFFALO — Samuel S. Vineberg has resigned as secretary-manager of the Electric Association of the Niagara Frontier, association of dealers and distributors of electrical appliances and supplies. He joins the Morrison Steel Products Corp., a war industry.

Mr. Vineberg was a pioneer in appliance association activity.

Hidden Charges Banned In Stove Sales by OPA

WASHINGTON, D. C.—Charges for demonstrating and repair services incident to the sale of a domestic cooking or heating stove may not be hidden in the invoice as part of the purchase price of the stove, according to a recent interpretation of Maximum Price Regulation No. 64 by the Office of Price Administration.

The interpretation further states that such a charge may not be added to the "lowest net price" on which the 112% computation is made by the manufacturer in determining his maximum price; but it may be added to the maximum price when the service rendered is clearly a service in addition to selling the stove if the charge is recorded as such on the invoice. If the service charge is billed and collected by the company for the benefit of the salesman, the invoice must clearly show the service charge as well as the price of the stove.

The purchaser may not be forced to accept the service as a condition of purchasing the stove, the interpretation concludes.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted," 5¢ per word; minimum charge, \$2.50. Three consecutive insertions, 12½¢ per word; minimum charge, \$6.25.

RATES for all other classifications, 10¢ per word, minimum charge, \$5.00 per insertion. Three consecutive insertions, 25¢ per word, minimum charge, \$12.50.

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EQUIPMENT WANTED

WANTED: Used Commercial Refrigeration and Air Conditioning. Also new or used stokers. THE BIMEL CO., 305 Walnut St., Cincinnati, Ohio.

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Different models available for the various requirements of government agencies and war production plants.
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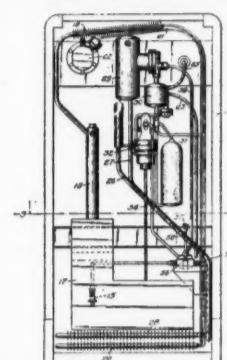
DRINKING WATER SPECIALISTS FOR 40 YEARS.

Patents (Cont.)

(Concluded from Page 22, Column 5)

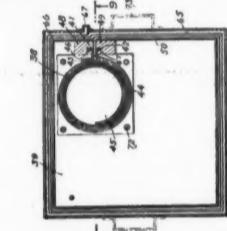
tion Jan. 19, 1940, Serial No. 314,704. 1 Claim. (Cl. 202—158).

In a continuous absorption refrigeration system, refrigerant vapor generating means including a chamber substantially filled with a body of liquor comprising a refrigerant and an absorbent; fluid heat generating means at the bottom of the chamber for heating the liquor to drive off refrigerant; means for withdrawing weak liquor from the bottom of the chamber; a plurality of horizontally extending baffles spaced throughout the



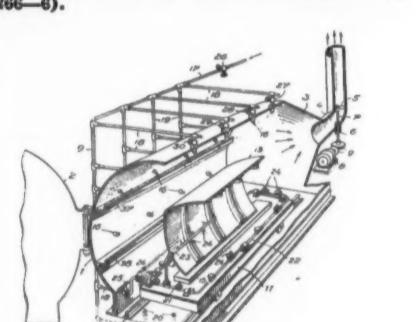
chamber at different vertical levels, each covering substantially but not quite all of the entire cross-sectional area of the chamber and the open areas being in staggered relation, whereby vapor can pass upwardly through said body but liquid circulation is prevented and a substantial differential in liquor strength is maintained between the top and bottom of said body during operation of the system; a tube extending vertically from the heat generating means; tube of relatively small diameter extending up from the top of the chamber and surrounding a flue, a plurality of horizontally extending vertically spaced baffles covering substantially the entire cross-sectional area between the flue and the tube; and means for introducing rich liquor to the top of the chamber, this means entering said tube above at least some of the baffles therein.

2,305,740. REFRIGERATION. John J. Shively, New York, N. Y. Application July 27, 1939, Serial No. 286,760. 3 Claims. (Cl. 62—91.5).



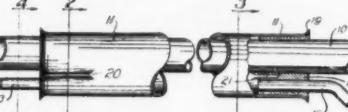
3. In a refrigerator in combination, an outer shell, an inner shell comprising a refrigerating chamber and having a discharge opening therein, means between said shells forming a continuous passage making a plurality of convolutions about said chamber and having an outlet from said passage through said outer shell and an inlet to said passage through said inner shell, a cooling unit in said refrigerating chamber having therein a chamber adapted to contain a volatile refrigerant, the wall of said unit comprising a continuous heat conductor defining a second passage for escape of vaporized refrigerant in a plurality of convolutions around said refrigerating chamber and having a vapor discharge opening, and sealing means to connect said opening to said inlet.

2,305,811. COOLING SYSTEM. Otto Goeckl, Berlin-Schoneberg, Germany; vested in the Alien Property Custodian. Application June 13, 1939, Serial No. 278,961. In Germany June 17, 1938. 3 Claims. (Cl. 266—6).



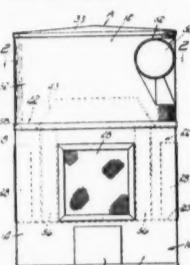
1. In a cooling system for quenching articles formed of light metal, especially annealed articles stamped or drawn from sheets of light metal, of the type including a closed cooling chamber, means for supporting the annealed articles at locations adjacent the center of said chamber, and an exhaust port adjacent one end of said chamber, the combination of a plurality of diffusing nozzles disposed in spaced relation about the walls of said chamber on opposite sides of the central portion of the latter and adapted to discharge into the peripheral zone only of said chamber an aeroform quenching fluid free from liquid components, means for supplying a quenching fluid component, under pressure, to said nozzles, and means in cooperation with said exhaust port for slowly moving said quenching atmosphere from said peripheral zone over the supported annealed articles and to said exhaust port as fresh quenching atmosphere is formed in the peripheral zone of said chamber, said atmosphere-moving means and said nozzles cooperating to surround the supported annealed articles substantially on all sides with a slowly moving, homogeneous and uniform, quenching atmosphere consisting of said aeroform quenching fluid.

2,306,199. REFRIGERATION. Hugo M. Ullstrand, Stockholm, Sweden, assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application June 4, 1938, Serial No. 211,749. 8 Claims. (Cl. 62—5).



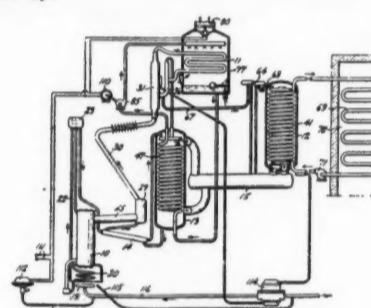
diameter pipe of circular cross-section having an integral end portion shaped in figure 8 cross-section defined by the pipe wall being infolded to provide two bores through said portion; a pair of pipes entered into said major diameter pipe, one through each of said bores, and one pipe continuing through the major pipe; and both of said bores having their cross-sectional areas within the internal cross-sectional area of said major pipe whereby the major dimension of said pipe end portion substantially does not exceed the diameter of said major pipe.

2,306,010. AIR CLEANER. Robert A. Briggs, Jr., West Hartford, Conn., assignor to Colonial Blower Co., Hartford, Conn., a corporation of Connecticut. Application May 29, 1941, Serial No. 395,703. 4 Claims. (Cl. 183—67).



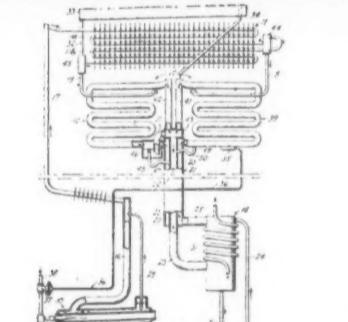
1. In a unit of the character described, a separating chamber, a filtering chamber and a dust collector arranged in vertical alignment, one below the other, said separating chamber having a cylindrical wall provided with an entrance opening for admitting a dust laden stream tangential to the wall, an annular trough adjacent the bottom of said chamber for collecting the dust falling from the dust laden stream, an outlet central of the trough and leading to the filtering chamber, a plurality of filters providing air outlets from said filtering chamber and for trapping the carrier over dust carried by the air passing therethrough, and a plurality of tubes connecting the trough and the dust collector and through which the dust will gravitate into the collector free of disturbance from the air stream.

2,306,149. REFRIGERATION. Sven W. E. Andersson, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application April 16, 1938, Serial No. 202,408. 6 Claims. (Cl. 62—5).



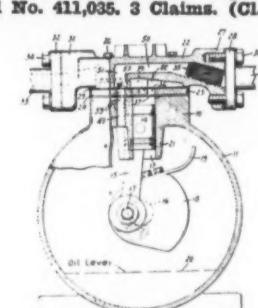
1. Refrigeration apparatus having energy for operation supplied both by combustion of gas in a burner and conversion of electricity, said combustion being controlled by changing the pressure of the gas supplied to said burner, a flexible wall subjected to change in pressure of said gas and movable in a substantially vertical direction by said change in gas pressure, and a tilt type mercury switch to control said electricity and so arranged that movement of said wall causes tilting of the switch.

2,306,199. REFRIGERATION. Hugo M. Ullstrand, Stockholm, Sweden, assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application June 4, 1938, Serial No. 211,749. 8 Claims. (Cl. 62—5).



5. A refrigeration system including an inert gas circuit having a plurality of cooling elements connected in parallel, a by-pass connection for inert gas around one of said cooling elements, and means for controlling said by-pass connection.

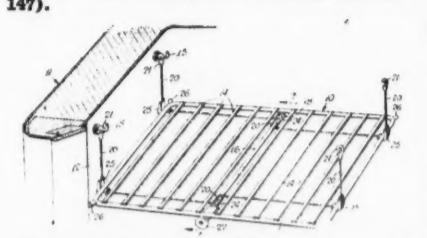
2,306,216. REFRIGERANT COMPRESSOR. Ralph E. King and William L. Knatz, Fort Wayne, Ind., assignors to General Electric Co., a corporation of New York. Application Sept. 18, 1941, Serial No. 411,035. 3 Claims. (Cl. 230—206).



1. A refrigerant compressor comprising a cylinder block and a crankcase and a head for the cylinder block, said block having a cylinder therein, means providing intake and exhaust ports for said cylinder head having intake and exhaust passages formed therein and commun-

cating respectively with said intake and exhaust ports, said intake passage having one portion extending across said head and having another portion extending backwardly substantially along said one portion to communicate with said intake port, said other portion of said passage lying below said one portion and said intake passage including a bend connecting said portions and being arranged to direct fluid downwardly toward said crankcase, and said block having a passage extending upwardly from said crankcase and communicating with said intake passage at the bend therein for receiving oil separated from the refrigerant in said intake passage at the bend therein and for conducting the oil to said crankcase.

2,306,266. REFRIGERATOR SHELF. Roy A. Helm, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application April 20, 1940, Serial No. 330,681. 3 Claims. (Cl. 211—147).



3. A shelf in a refrigerator, a cable winder on the under side of said shelf, said winder having an operating member at the forward edge of said shelf having means normally engaging means on said shelf to prevent rotation of said winder, said member and said second means being disengagable to permit operation of the winder, a sufficient number of cables to suspend said shelf in a stable position, said cables being positively connected to said winder so as to be wound and unwound by operation of said winder and adapted to be attached to supports on side walls of said refrigerator, and said cables being located beneath said shelf and extending upward against the sides of the shelf so as to cradle the latter and leave a clear shelf surface in the refrigerator.



FIT any refrigerator. Excellent quality covering, well padded and reinforced at edges. Reduce loss from damage in transit to a minimum by full equipment with FULCO Adjustable Refrigerator Covers.

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Fairbanks-Morse

Rice

Servel

Some of these brands are on the market now, others are no longer being sold, but thousands are in use today which will require service. The service season is rapidly approaching and this book will be of great practical value to you on these models. Order your copy today. 136 pages. Price \$1.

Let this book help you solve difficult service problems—Manual No. 4

Your refrigeration library is incomplete without this manual. This is the fourth of the series of Household Service Manuals and you need it to solve many of your most perplexing service problems. Gives complete information on the following 12 makes of household refrigerators:

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BUSINESS NEWS PUBLISHING CO.

Publishers of Air Conditioning & Refrigeration News

5229 Cass Ave., Detroit, Mich.

Sales Manager



L. C. McKESSON
Mr. McKesson was named to the position of sales manager of Ansul Chemical Co. last week.

War Council Organized By Refrigeration Assns.

(Concluded from Page 1, Column 5)
experience of the industry so that its complete resources may most effectively be utilized for the winning of the war and for the well-being of the public."

The Council is made up of the presidents or designated representatives of the various refrigeration industry organizations. These men are to represent their respective organizations at the NWRC meetings. Alternates are authorized to act in the absence of representatives.

Any action of the Council must meet with the approval of a majority of the members.

The Council will cooperate with the WPB Refrigeration Advisory Committee in whatever endeavors may be deemed feasible; and has already met with the three-man "task committee" of the Advisory Committee (see AIR CONDITIONING & REFRIGERATION NEWS, Dec. 21, p. 1) in a discussion of the refrigeration repair and maintenance situation.

Office of Production Research & Development Set Up In Capital

WASHINGTON, D. C.—In order to make speedy and effective use of all new processes, materials, mechanisms and inventions in the production of war goods, the War Production Board has set up an Office of Production Research and Development, headed by Dr. Harvey N. Davis, president of the Stevens Institute of Technology.

The new office was established after consultations with the head of the Office for Scientific Research and Development, and its work in the production field will be similar to the latter's work in the field of war instruments.

All WPB contracts for research and development work to be done by other governmental agencies, colleges and universities, commercial laboratories and corporations, etc. will be made by this agency. The one exception is contracts connected with the rubber program, which will be referred to the rubber director.

The four main purposes of the Office of Production Research and Development are: (1) to provide WPB officials, divisions and branches with pertinent technical and research information and findings; (2) to determine the value of specific scientific or technical proposals, through committees of experts or through existing research groups; (3) to contract with outside laboratories for needed research; (4) to arrange for the development of those projects or processes found to be worthwhile.

Dr. Davis, as director of this office, will act as technical advisor on engineering and scientific matters to Donald Nelson, chairman of the WPB. Dr. Davis will also be responsible for initiating any research or development work which he thinks would aid the war program.

Nema Launches Promotion Drive To Help Refrigeration Repair Parts Situation

(Concluded from Page 1, Column 4)
sonnel," said the announcement. "Some are attempting to relieve the situation by training women and older men.

"At the same time this situation was developing, manufacturers found themselves limited by WPB orders on the amount of repair parts they could build.

"At present each manufacturer requests permission of the War Production Board every 90 days to build what he considers an adequate stock for the next quarter year. Once the WPB approval is obtained, however,

the manufacturer still has to get materials and get his factory in motion to build the approved quantity. So it is natural that the consumer experiences service delays."

In announcing the new Nema drive, Charles R. D'Olive, chairman of the Household Refrigeration Section, made the following statement:

"The war effort comes first. Everyone knows that. Everyone is willing to make sacrifices, so that critical materials can be diverted to armament, so that man hours can be devoted to war production.

"But at the same time, the health

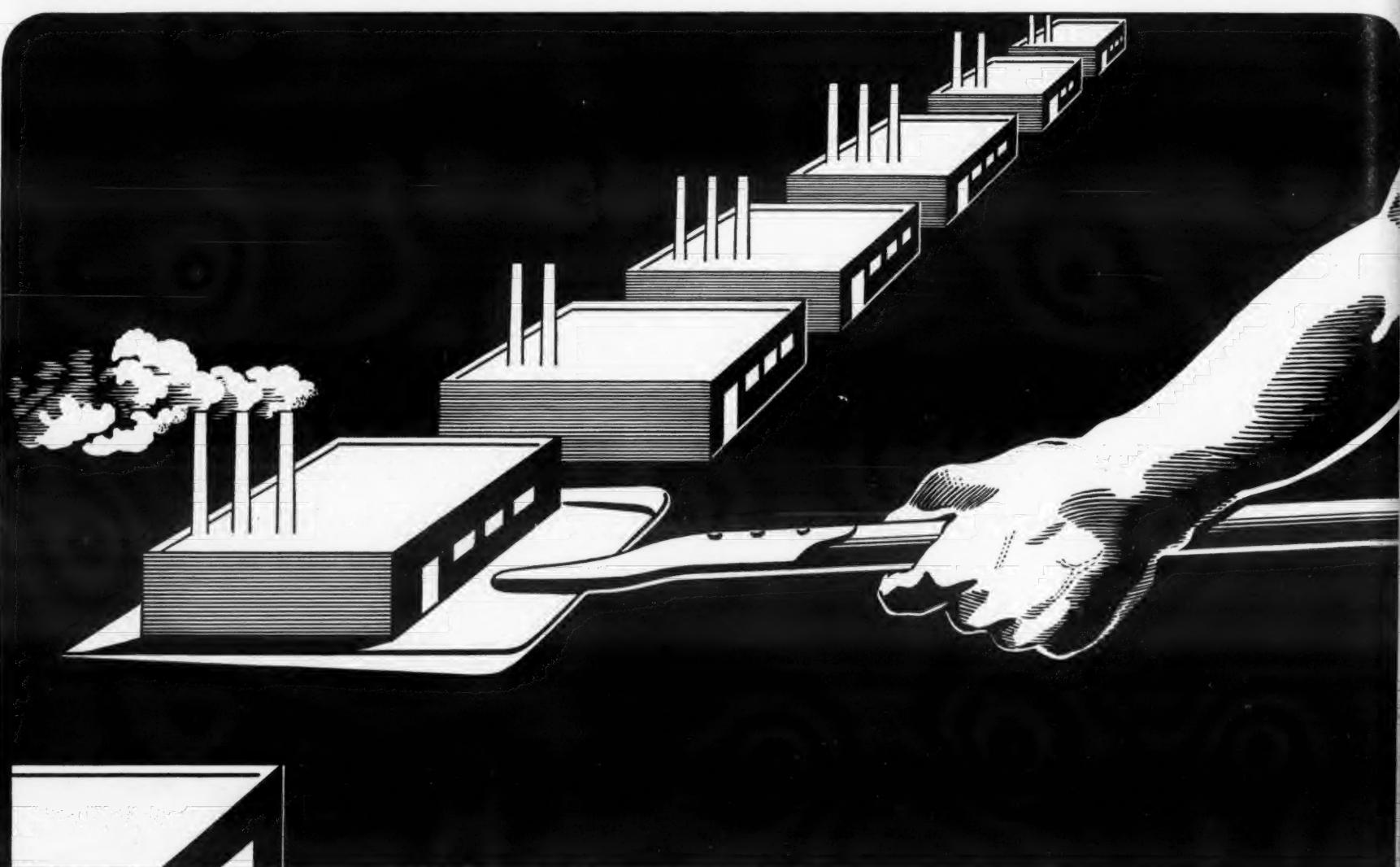
level of the civilian population must be maintained. This means refrigeration equipment must be kept running. Even though the refrigeration industry has been given a tremendous war production task, manufacturers are well aware of their responsibility to render good service to dealers and users. Manufacturers have increased their service budgets considerably during the last year. Strenuous efforts have been made to keep an adequate supply of repair parts available. We don't know what the future holds, but we think that the war effort is going to take more and more critical material as time goes on. All branches of the industry . . . and the public too . . . must cooperate more closely than ever to make sure that every ounce of critical material allotted to electric refrigerator upkeep is used as wisely as possible."

Appliance Servicemen Of Detroit To Meet

DETROIT—A mass meeting of all electrical appliance service men in the Detroit metropolitan area has been scheduled for Friday, Jan. 22, on the twenty-first floor (the River room) of the Ft. Shelby hotel. Meeting will open at 8:30 p.m.

The meeting, under the sponsorship of the Electrical Appliance Service Assn. of Detroit, is for the purpose of informing all dealers of the scope of government regulations affecting their business, and establishing a group to present the viewpoint of the appliance field man.

As a speaker for the meeting it is planned to have one of the compliance attorneys from the OPA.



DIGGING UP NEW BUSINESS



Most of us are big boys now. We use our handkerchiefs instead of our coat sleeves . . . we have been told The Facts of Life . . . and we don't believe in Santa Claus. And we don't take Jack and the Bean-stalk seriously any more.

We know that neither a bean-stalk nor a business grows OF ITSELF. Both take a lot of digging. The trick is in knowing WHERE to dig.

Where to dig is very easy to determine. Purchases of commercial cooling equipment require priorities . . . and priorities are held by manufacturers of war materials and essential civilian needs.

These priority holders are more numerous, by many times, than were your former customers . . . and their average requirements are greater. But they are different.

So . . . you do your cultivating in different places.

And if you cultivate thoroughly . . . well, we'll all start believing in Jack and the Bean-stalk again.

What does all this mean to the refrigeration industry?

Just this. Business today is bigger and better than ever . . . provided only that you dig for it in the right places. And when the war is over . . . and your old customers return to the market . . . you will find yourself with TWO businesses where only ONE grew before.

Do we really believe this ourselves?

Why, man, we've PROVED it. We've opened our second plant . . . larger than the first . . . and we're with this business and with YOU for the duration . . . and after.

There's a big future for all of us in refrigeration . . . but don't overlook the fact that every day more and more of that future becomes PRESENT.

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